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Soils of the Fort St. John-Dawson Creek area, British Columbia

Report No. 42

British Columbia Soil Survey

1986

Canada

Soils of the Fort St. John-Dawson Creek area, British Columbia

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Vancouver, British Columbia

Land Resource Research Centre
Contribution No. 85-27

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Cover photo
North of the Peace River, 1955. Courtesy of British Columbia Tourism.

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ACKNOWLEDGMENTS

The first soil survey report for the Peace River area of British Columbia (Farstad et al. 1965) was a joint project of the Canada and British Columbia departments of agriculture and the University of British Columbia, under supervision of L. Farstad (now retired in Vancouver, B.C.). Subsequent surveys by Agriculture Canada were directed by L. Farstad, T.M. Lord,* and A.J. Green. Assistance and support were provided by the following individuals and agencies: A. Bedwany, R. Bowes, K. Guthrie, P. Jones, T. Leahey, C. Thompson, W. Watt, and E. Wiken, who assisted in the field mapping; L. Chan, who conducted most of the laboratory analyses; J. Melzer, who typed the manuscript; G.E. Cheesman, who provided climate information; A. Harcombe and J. van Barneveld, who reviewed the section on vegetation; staff of the Cartography Section, Land Resource Research Institute, Agriculture Canada, who supplied the base maps, drafted the figures, and prepared the final soil maps and legends; and staff of Surveys and Resource Mapping Branch, British Columbia Ministry of Environment, Victoria, who drafted the original soil-landform manuscript maps and legends.

Special thanks go to members of the Technical Evaluation Committee and the crews who were responsible for conducting the resource sector surveys, for compiling and producing the final version of Land Capability Analysis, Peace River Area, under the coordinating chairman, W. Arthur Benson of the Canada Land Inventory program (1972).

T.M. Lord and A.J. Green, Agriculture Canada, and R.L. Beale Kuurne, who was under contract to the Land Resource Research Institute, organized the soil and land resource data and compiled the report.

*Retired in 1985.

PREFACE

This report completes a part of the program to survey, update, and publish an inventory of the soil resources of British Columbia. The report makes extensive use of information from published soil surveys of the Peace River areas of British Columbia and Alberta--in particular, Report No. 8 of the British Columbia Soil Survey (L. Farstad et al. 1965). As well, this report draws on information contained in numerous land resource surveys and reports published since 1965. These publications, which are listed in the References, include Canada Land Inventory capability maps and narratives; reinventory and upgraded soil maps with extended legends; biophysical resource surveys in the foothills coal lands; and recent surveys by Alberta soil survey agencies on lands adjoining the provincial boundary.

Soils of the Fort St. John-Dawson Creek Area is composed of two parts: the soil maps and the report itself. On each of the four soil maps the map units are identified and delineated at a scale of 1:100 000. Each of the 100 discrete map units is identified in the map legend and described in the report. In addition, the report gives technical descriptions and chemical analyses of selected soil profiles and brief sections on early history, geology, climate, and vegetation. It includes a section on land use and the capability of the land to support agriculture, forestry, big game, waterfowl, and recreation.

GENERAL DESCRIPTION OF THE AREA

LOCATION AND EXTENT

The surveyed area (Fig. 1) is in the Peace River section of northeastern British Columbia, east of the Rocky Mountains. The map area extends from latitude 55°30' to 56°30' north and from longitude 120° to 122° west on National Topographic Series sheets 94 A/SE and SW and 93 P/NE and NW. It comprises an area of approximately 1 390 000 ha. The principal villages or cities are Dawson Creek, Pouce Coupe, Fort St. John, Chetwynd, and Hudson Hope. The populations (1981 census) were as follows: Dawson Creek 11 373; Fort St. John 13 891; and an area population exceeding 40 000 (British Columbia Ministry of Economic Development 1978).

HISTORY AND RESOURCES

Alexander Mackenzie first discovered the Peace River area in 1792 while searching for an overland route to the Pacific Ocean (Coutts 1958). Following his discovery, the fur trade flourished. In 1805 Fort St. John was established on the Peace River near the present highway bridge, followed by the settlement of Hudson's Hope in 1806 (MacGregor 1952). Throughout the 1800s the gradual influx of settlers included missionaries and disappointed Klondike gold seekers (Dawson and Murchie 1934).

The first large wave of settlers arrived following World War I. Returning war veterans, lured by the promise of fine agricultural land, soldier settlement assistance, and the prospects of railway construction, settled in the area known as the Peace River Block. The term Peace River Block which today has no legal status, "dates from 1883 when the British Columbia Legislature passed an act granting to the Dominion 3.5 million acres [1.41 million ha] to compensate for waste land and land alienated by the Province in the railway belt prior to its conveyance to the Dominion as an aid to the construction of the Canadian Pacific Railway" (Chapman and Gilmore 1951). The block area was selected in 1907 and was later returned to the province. Its boundaries were nearly identical to those of the first soil survey of the area (Farstad et al. 1965). Finally, in 1931, the Northern Alberta Railway reached Dawson Creek and was subsequently followed by a highway from Edmonton.

Perhaps one of the largest settlement projects was the 1939 establishment of 1000 German settlers in the Tupper Creek district aided by the Canadian Colonization Association, a subsidiary of the Canadian Pacific Railway (Dalichow 1972).

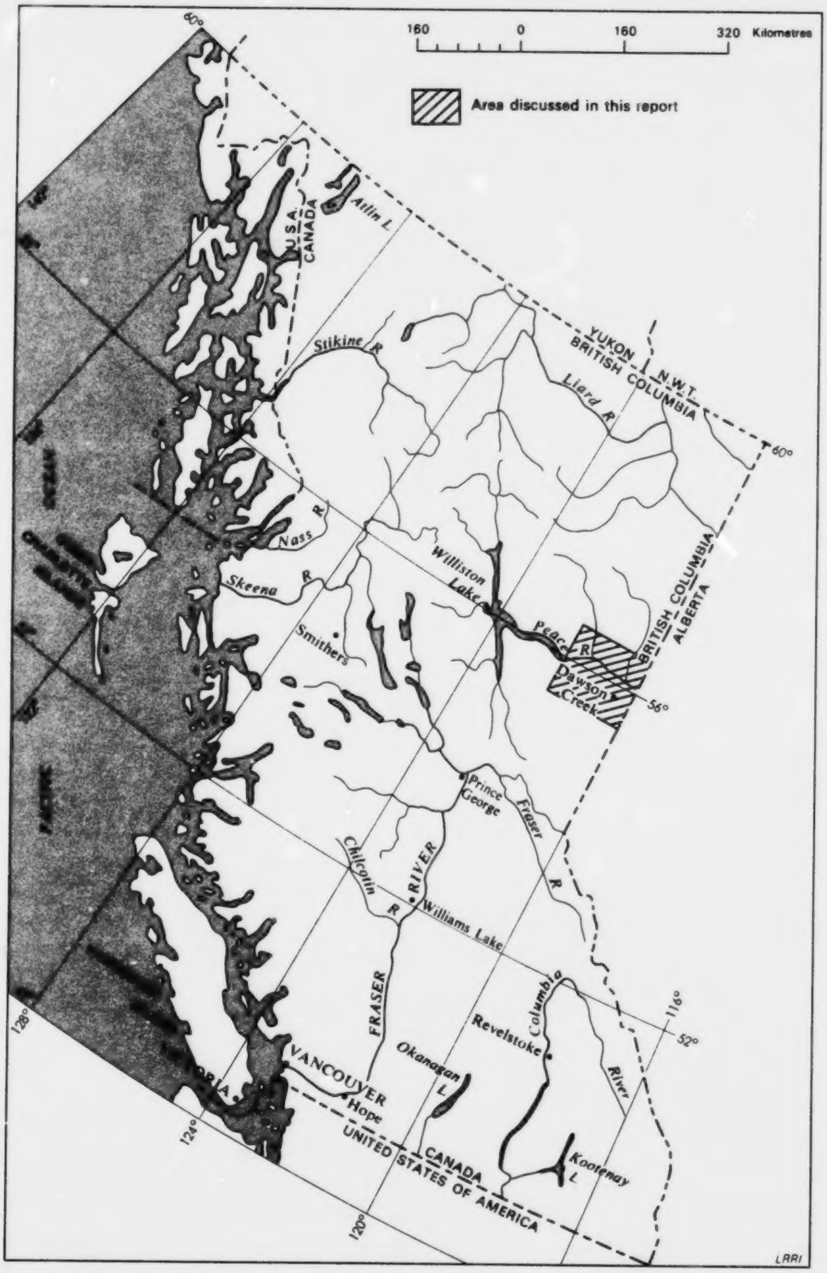

160
0
160
320 Kilometres
Area discussed in this report
60°
U.S.A.
CANADA
Atlin L
Stikine R
YUKON
N.W.T.
BRITISH COLUMBIA
Liard R
60°
Nass R
Skeena R
Smithers
Williston Lake
Peace R
BRITISH COLUMBIA
ALBERTA
Dawson Creek
56°
Prince George
Fraser R
Chilcotin R
RIVER
Williams Lake
FRASER
Columbia
116°
52°
Revelstoke
River
Okanagan L
VANCOUVER
Hope
VICTORIA
Kootenay L
CANADA
UNITED STATES OF AMERICA
128°
124°
120°
PACIFIC
OCEAN
LRRI

Figure 1. Location of the Fort St. John - Dawson Creek area in British Columbia.

Accessibility to the Peace River area was improved with construction of the Alaska Highway in 1942; the John Hart Highway, which connected Dawson Creek with Prince George and Vancouver, in 1952; and the completion of the Pacific Great Eastern Railway in 1958 to Dawson Creek and Fort St. John. The railway was later renamed the British Columbia Railway and extended beyond the Peace River to Fort Nelson in 1971 (British Columbia Railway 1972).

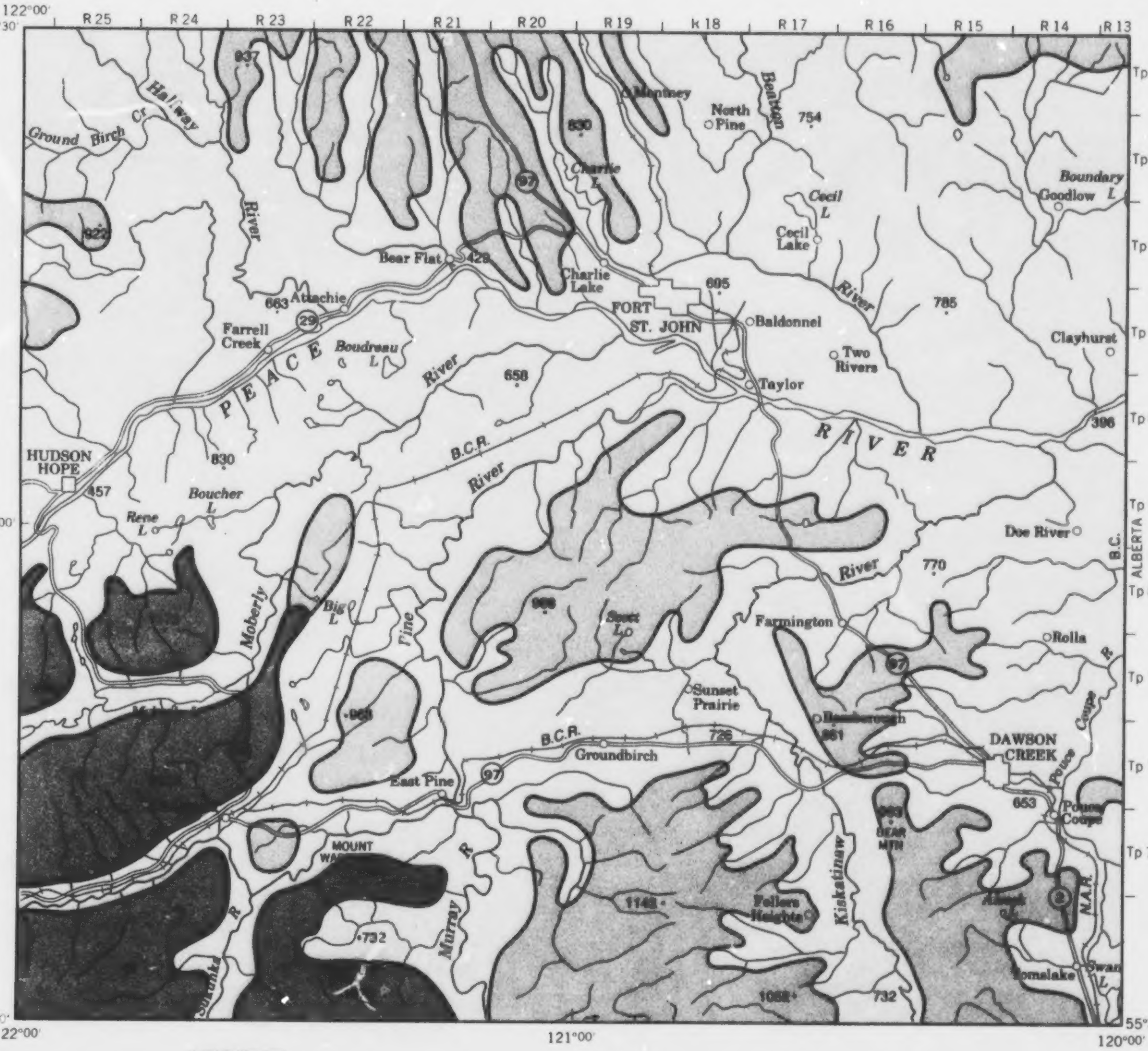
Further settlement was initiated in 1951, when oil was discovered near the village of Taylor. In the 1970s construction of the W.A.C. Bennett Dam, which forms Williston Lake in the Peace River valley and Rocky Mountain Trench, helped to increase industrialization of the Peace River area. The Peace Canyon Dam (Plate Ic), downstream from the Bennett Dam, became operational early in the 1980s. Development of the foothills coal reserves south and west of Chetwynd will undoubtedly bring further settlement and industry.

Today agriculture remains the primary industry, followed by forestry, oil, natural gas, refining, and hydroelectric power generation. Coal production is becoming a major industry. Recreational areas are also developing with the increased influx of settlers and industry.

PHYSIOGRAPHY AND DRAINAGE

The report area, except for a small intrusion of the Rocky Mountain Foothills into the southwest corner, lies within the Alberta Plateau as defined by Holland (1976) (Fig. 2). The Alberta Plateau is a flat or gently rolling till plain interspersed with glacial lake basins. This plain is dissected by deep valleys and contains many upland surfaces. Most of the plateau is underlain by sedimentary rocks, largely of Cretaceous age, composed of flat or gently dipping shale and sandstone beds. The most prominent physiographic feature is the Peace River valley (Plate Ie), which transects the north part from west to east (Fig. 2). Its major tributaries are Cache Creek and the Halfway, Beatton, and Alces rivers, which drain from the north, and the Moberly, Pine, and Kiskatinaw rivers, draining from the south. These rivers have cut deep valleys (to 230 m or more), occasionally exposing underlying sandstone and shale bedrock.

The lowlands (Fig. 2) of the Alberta Plateau are dominated by broad outwash plains and the nearly level floors of former glacial lake basins. Glaciofluvial and glaciolacustrine materials cover these areas. Deeply incised river valleys are floored with active fluvial materials and bounded by glaciofluvial terraces, river-cut benches, and unstable valley



122°00'
56°30'
R 25
R 24
R 23
R 22
R 21
R 20
R 19
R 18
R 17
R 16
R 15
R 14
R 13
Tp 86
Tp 85
Tp 84
Tp 83
Tp 82
Tp 81
Tp 80
Tp 79
Tp 78
Tp 77
B.C.
ALBERTA
56°00'
55°30'
122°00'
121°00'
120°00'
55°30'
Halfway
Ground Birch Cr
River
937
922
830
Montney
North Pine
Beatton
754
Charlie L
97
Cecil L
Cecil Lake
Boundary L
Goodlow
Bear Flat
429
Charlie Lake
695
FORT ST. JOHN
Baldonnel
River
785
Clayhurst
663
Attachie
29
Farrell Creek
Boudreau L
PEACE
River
658
Two Rivers
Taylor
396
RIVER
HUDSON HOPE
457
830
Boucher L
B.C.R.
River
Rene L
Doe River
770
River
Moberly
Big L
Pine
968
Spect L
Farmington
Rolla
R.
97
Sunset Prairie
Pouce Coupe
968
B.C.R.
726
Groundbirch
Rolla
961
DAWSON CREEK
East Pine
97
963
BEAR MTN
653
Pouce Coupe
MOUNT
Murray R
1148
Kiskatinaw
Fellers Heights
N.A.R.
2
Sukunka R
732
1082
732
Tomslake
Swan L

LEGEND

INTERIOR PLAINS

ALBERTA PLATEAU

☐ Lowlands

▨ Uplands

▨ Benchlands

CANADIAN CORDILLERA

■ ROCKY MOUNTAIN FOOTHILLS

REFERENCE

physiographic boundary	〜 〜
spot elevation (metres)	·1349
highways	②
railways	┼┼┼
township	Tp 79
range	R 18

kilometres

0 5 10 15 20 25 30

Figure 2. Physiography and drainage

walls. The uplands and benchlands lie generally above 800 m elevation. They include dispersed areas of rolling plateau uplands, and the flat-lying benchlands of the southeastern area, which occur at a higher elevation. The soils on these landforms are developed mainly from till or shallow overlays of fluvial materials.

The Rocky Mountain Foothills in the Chetwynd area are more rugged, with elevations ranging from 900 to 1500 m. Colluvial and morainal materials predominate in the foothills.

BEDROCK GEOLOGY

The bedrock of the survey area is composed predominantly of interbedded Cretaceous shales and sandstones (Reimchen 1980).

The Cretaceous shales contain minor amounts of sandstone, siltstone, and ironstone (marine). These rock types outcrop in river embankments along the Halfway River to the Peace River and east to the Pine River. They also occur along embankments of the Beatton River and south of the Peace River in the vicinity of the Kiskatinaw River (Irish 1958).

The sandstones are medium to fine textured, evenly bedded with siltstone and carbonaceous shale. There are also minor inclusions of ironstone, coal, coarse sandstone, and fine conglomerate. These rock types outcrop mainly in the uplands north and east of the Halfway and Peace rivers and north and west of the Beatton River. An isolated area of Cretaceous sandstone occurs in the uplands south and east of the Pine and Peace rivers and along the Kiskatinaw River in the southeast.

SURFICIAL GEOLOGY AND SOILS

The shale and sandstone underlying the map area are capped by an erosion surface and surficial deposits of the last ice sheets (Fig. 3). The first soil report for the Peace River area, B.C. (Farstad et al. 1965), includes a detailed section by W.H. Mathews on glacial materials and their relationship to soils. Subsequent studies on the last ice sheets by Mathews (1977, 1978, 1980), and others in northeastern British Columbia and Alberta update and clarify the record of ice movement and its effects on the landscape (Figs. 3 and 4).

In the Rocky Mountain Foothills and more rugged parts of the Alberta Plateau, colluvial materials, often inseparable from morainal deposits, are common on steep slopes. Within the survey area, sandstone and siltstone formations are the main source of colluvial materials. Horseshoe and Zonnebecke soils are derived mostly from colluvium. Colluvial materials are of

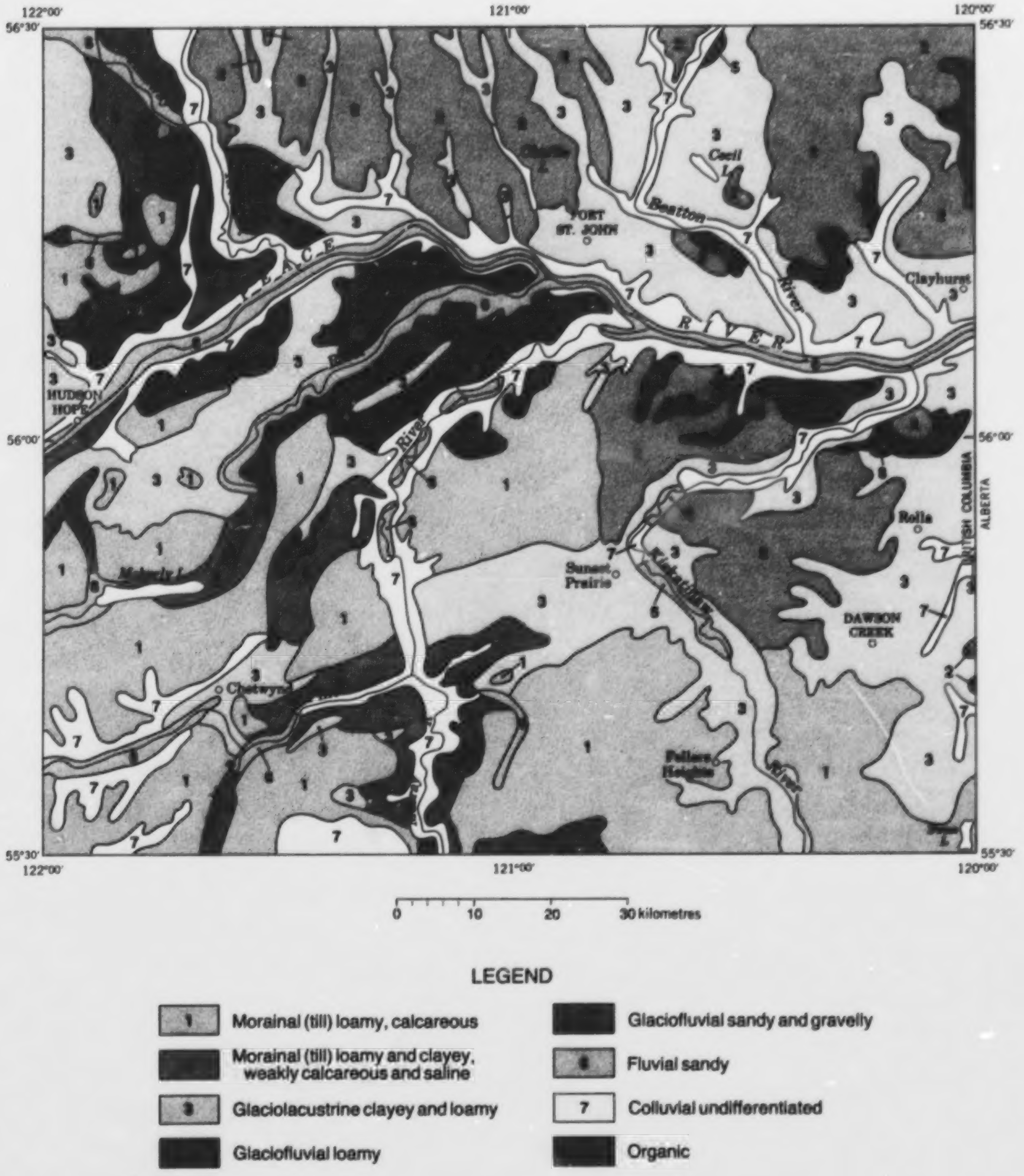

122°00'
121°00'
120°00'
56°30'
56°00'
55°30'
PEACE RIVER
Beatton River
Cecil L.
FORT ST. JOHN
Clayhurst
HUDSON HOPE
River
Moberly L.
Sunset Prairie
Kiskatinaw
Rolla
BRITISH COLUMBIA
ALBERTA
DAWSON CREEK
Chetwynd
Pollard Heights
River
0
10
20
30 kilometres
LEGEND
1 Morainal (till) loamy, calcareous
2 Morainal (till) loamy and clayey, weakly calcareous and saline
3 Glaciolacustrine clayey and loamy
4 Glaciofluvial loamy
5 Glaciofluvial sandy and gravelly
6 Fluvial sandy
7 Colluvial undifferentiated
8 Organic

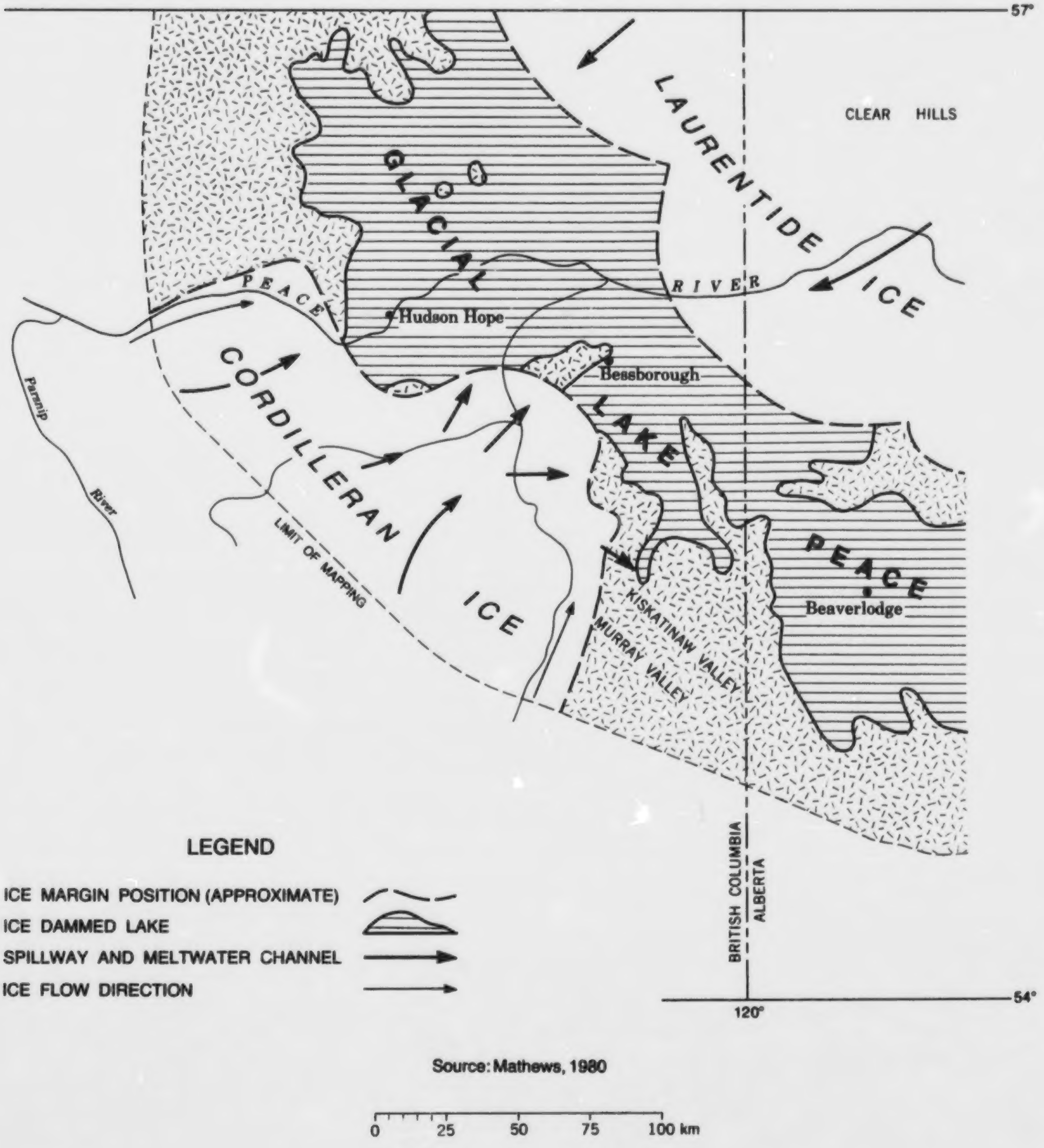
Figure 3. Surficial materials

lesser importance in the lowlands area but are important surficial features on the steeply sloping, water-eroded embankments of the major streams and rivers. The source of these deposits is mainly unconsolidated material, with occasional bedrock-derived talus. The deposits are the main parent materials of Septimus and Attachie soils. Pingel and Taylor soils are derived from loamy and clayey, poorly sorted colluvium deposited onto upper terraces or benches as fans, by small local streams in the valley of the Peace River. Floodplain deposits of the main rivers are mapped as complexes of more or less well sorted fluvial materials (Alluvial soils) or where more information is available on characteristics of parent materials, they are described separately, e.g. Meikle Creek, Oetca, Bear Flat soils.

In the report area, surficial deposits are derived from two glacier systems, the cordilleran ice sheet from the west and the Laurentide (continental) ice sheet from the northeast. Mathews (1980) has documented and interpreted the various stages of ice retreat in northeastern British Columbia and adjacent Alberta. Phase 3, coincident with an unnamed stage following Bessborough stage of Glacial Lake Peace, illustrates the maximum extent of the glacial lake within the map area of this soils report (Fig. 4).

The loamy, calcareous cordilleran till contains quartzite pebbles and rare but significant fragments of schist and slate within the foothills, benchlands, and parts of the Alberta Plateau uplands. It forms the parent materials of Moberly, Hambrook, and Robb soils. Laurentide till is recognized by the presence of red granite and red gneiss in a slightly saline, less calcareous, pebbly clay matrix. Alcan, Murdale, Demmitt and Fellers are soils developed on this material, which mantles most of the uplands. Adjoining the Clear Hills area north of Clayhurst are Boundary and Buick soils formed on shallow materials closely underlain by sulfide-bearing shales that produce strong acidity on weathering.

The relatively uniform Laurentide till "may grade through an obscurely stratified material, otherwise indistinguishable from till, into lacustrine clay in which pebbles are scarce or absent. The obscurely stratified material is probably morainal debris dropped from the ice through the waters of a glacier-dammed lake, and it has been called simply lacustrotill. It forms the parent material of the Donnelly, Esher, Hazelmere, and Albright soils and occurs mainly on the lower slopes of the till plain". (W.H. Mathews _in_ Farstad et al. 1965).


57°
LAURENTIDE ICE
CLEAR HILLS
GLACIAL LAKE PEACE
PEACE RIVER
Hudson Hope
Bessborough
CORDILLERAN ICE
Parsnip River
LIMIT OF MAPPING
KISKATINAW VALLEY
MURRAY VALLEY
Beaverlodge
BRITISH COLUMBIA
ALBERTA
120°
54°
LEGEND
ICE MARGIN POSITION (APPROXIMATE)
ICE DAMMED LAKE
SPILLWAY AND MELTWATER CHANNEL
ICE FLOW DIRECTION
0
25
50
75
100 km

Source: Mathews, 1980

Figure 4. Glacial Lake Peace, Bessborough stage

Glacial Lake Peace (Fig. 4) is believed to have extended west at least as far as a large kame moraine near the W.A.C. Bennett Dam and to have been bounded some 100 km to the east by Laurentide ice. Gravelly shorelines (at elevations between 800 and 830 m) and sandy and silty deltaic deposits are parent materials for Clouston and some Codesa soils. Other sandy and silty sediments, commonly occurring as thin veneers, probably originated as shallow-water deposits or underwater slides. Beryl, Kobes Creek, and Sloane soils developed on such materials. Associated sandy and gravelly glacial meltwater sediments are parent materials for Sundance, Portage Creek, Neumann, and some Clayhurst soils. On more finely textured silty materials such soils as Davis, Lynx, and Centurion developed.

Thick (to 30 m), clayey, lake-bottom sediments occur in the Alberta border area and westward in main valleys. These stone-free glaciolacustrine deposits are parent materials of numerous soils. Falher, Nampa, and Rycroft soils formed on more flat-lying, heavy clays that are weakly calcareous and saline. Other lacustrine sediments, moderately calcareous and silty textured, occur near main river courses as clusters of mounded landforms (locally known as humpies). Soils included in this group are Judah, Kathleen, Beatton, Roseland, and Rolla.

Organic soils (Kenzie and Eaglesham) and poorly drained mineral soils (Coldstream and Snipe) are commonly associated with interdrumlin depressions or flat-lying outwash and till plains.

VEGETATION

The vegetation resources of the survey area have been described by Krajina (1969) and others. Rowe (1959) placed the Peace River area within the Boreal Forest Region; Harcombe (1978, 1980) described the vegetation under the boreal white spruce and Engelmann spruce-subalpine fir biogeoclimatic zones. Botanical and common names are from *Vascular Plants of British Columbia* (Taylor and MacBryde 1977). In a few cases, common local plant names are given in parentheses, e.g. (groundbirch).

Conifers found here are white spruce, black spruce, and Engelmann spruce (*Picea glauca*, *P. mariana*, and *P. engelmanni*), lodgepole pine (*Pinus contorta* var. *latifolia*), rarely, jack pine (*Pinus banksiana*), tamarack (*Larix laricina*), and rarely, alpine fir (*Abies lasiocarpa* var. *lasiocarpa*). Deciduous trees include trembling aspen (*Populus tremuloides*), black cottonwood (*Populus balsamifera* subsp. *trichocarpa*), birches (*Betula* spp.), and alder (*Alnus* spp.).

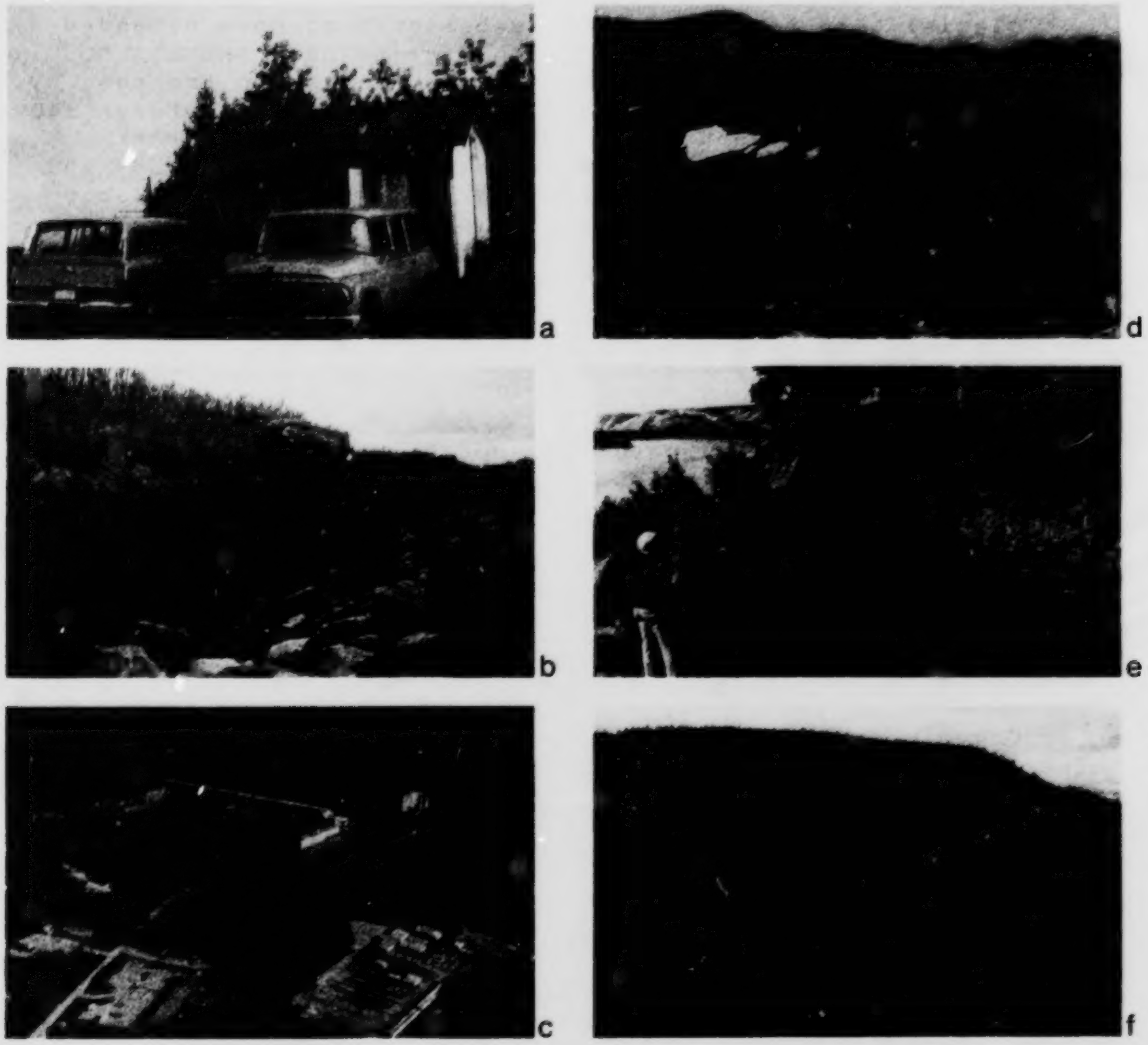


Plate I

(a) A soil survey camp in the late 1960s.
(b) Erosion of Donnelly soil on a field of wheat; slope is 1.5-2.0%.
(c) Filling the reservoir behind the Peace Canyon Dam, August 1982.
(d) Palsson soils in a subalpine landscape of the foothills south of Chetwynd; elevation is 1570 m.
(e) An archaeological site on the banks of the Peace River near Farrell Creek.
(f) Goose soils on weakly stratified glaciolacustrine materials under a cover of groundbirch, sedges, and mosses.

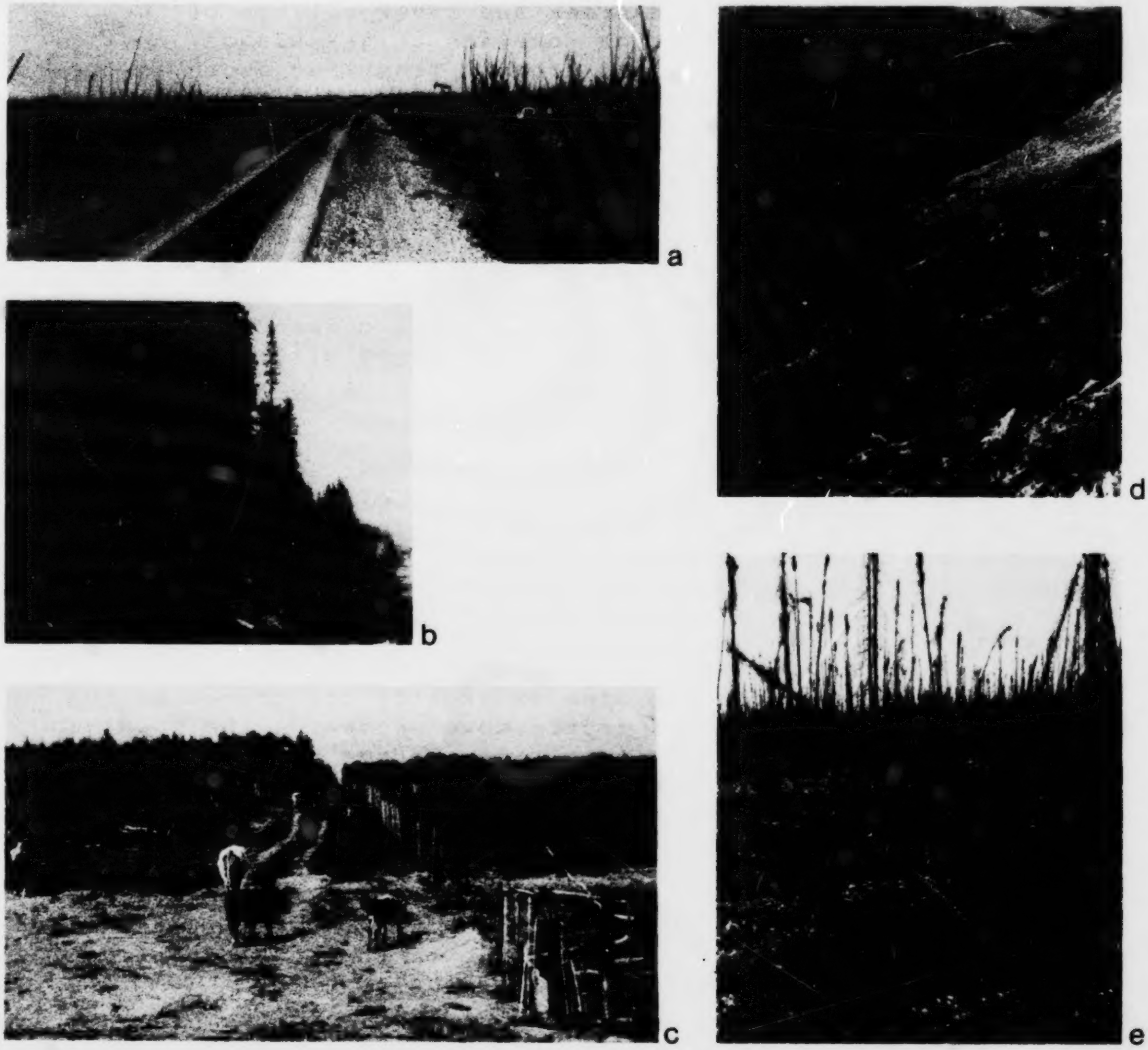


Plate II

(a) Burned-over shallow peat and Buick soils in an oilfield north of the Peace River.
(b) High-yielding spruce forest on Gray Luvisols developed on medium-textured materials.
(c) A cleared and seeded community pasture on Beatton soils in the north Peace River area.
(d) Horseshoe soils and Rockland near treeline in the foothills.
(e) A typical muskeg with burned black spruce, Labrador tea, and spruce regeneration on Kenzie soil.

Over much of the basin areas and river valleys of the lowland, the native vegetation consists of grasslands, parklands, and semiopen wooded areas. Trembling aspen is the common tree associated with such shrubs as soopolallie (*Shepherdia canadensis*), wild rose (*Rosa* spp.), northern twinflower (*Linnaea borealis*), high bush cranberry (*Viburnum edule*), and twinberry honeysuckle (*Lonicera involucrata*). Willows (*Salix* spp.) and common red-osier dogwood (*Cornus sericia* subsp. *sericia*) occupy moist sites. Common plants of the understory or groundcover are Canada wild rye grass (*Elymus canadensis* var. *brachystachys*), northern small reed grass (*Calamagrostis inexpansa*, var. *inexpansa*), common red Indian paintbrush (*Castilleja miniata*), blue-leaved wild strawberry (*Fragaria virginiana* subsp. *glauca*), geranium (*Geranium* spp.), and blueberries (*Vaccinium* spp.).

Some plants that are found mainly in particular sites are bog glandular birch (groundbirch) (*Betula glandulosa* var. *glandulifera*) and common Labrador tea (*Ledum groenlandicum*), in poorly drained areas, and white-flowered rhododendron (*Rhododendron albiflorum*), in the forested subalpine zone.

CLIMATE*

The climate of the map area is greatly influenced by the Rocky Mountains. As weather fronts move eastward, the mountain barrier forces the air masses to rise, become cooler, and release moisture on windward slopes. The air descending across the eastern flanks of the mountains is drier and in some cases, warmer. During winter, cold stable arctic air from the northeast is frequently trapped and is prevented from moving westward by the mountain barrier. The combined effect of these climatic influences is a tendency toward less precipitation and lower temperatures on the eastern side of the continental divide and quite frequent temperature inversions.

The climate of the area is generally continental, with long, cold winters and short, warm summers that are accompanied by moderate precipitation. Temperatures reflect the continental climate. Mean minimum temperatures are below 0°C from October to April and above 5°C for only June through August. Extreme minimum temperatures near -50°C and extreme maximum temperatures up to 40°C have been recorded. Data from Table 1* indicate that the temperature generally decreases with increasing elevation; however, during the winter months inversions may cause the temperature to increase at higher elevations.

---

* Contributed by G.E. Cheesman (unpublished), British Columbia Ministry of Environment, 1983.

Cheesman and Davis (1982) also found a slight increase in temperature with distance from the mountains in the Peace River valley. Table 1 shows moderate annual precipitation (400-500 mm) throughout the area, 250-350 mm from May to September, and much higher precipitation in the mountains. Snowfall can be expected to range from 150 cm in the Peace River valley, up to about 500 cm in the foothills, with an average of around 200 cm on the plateau.

The northern latitude of the Peace River area results in significant variation in daylength and intensity of solar radiation. The Fort St. John airport records an average of 77 hours of sunshine in January, an average of 302 hours in July, and 2192 hours annually, an amount similar to that for Victoria and greater than the total for Summerland in the Okanagan valley.

CLIMATIC CAPABILITY FOR AGRICULTURE

The three main parameters that define the climatic capability for agriculture are discussed in Climatic Capability Classification for Agriculture in British Columbia (British Columbia Ministry of Environment 1981). These parameters, the freeze-free period, growing degree-days, and climatic moisture balance are shown for a number of stations in Table 1. These tabular data have been used to produce a map showing climatic capability classes for agriculture (Fig. 5). On the map, the degree of limitation determines the basic class (1 to 7), and the subclass (F and G) denotes the factor that causes the limitation. Insufficient heat units (G) during the growing season are the main limitation in the survey area. Except in specific areas such as low-lying sites where cold air will pool, and in some narrow valleys, the limitation of minimum temperatures (F) does not appear to be a problem. Table 2, from British Columbia Ministry of Environment 1981, defines climatic capability classes in interior British Columbia.

The Peace River valley has the best climate for agriculture. Here it is assumed that a moisture deficiency caused by drought or aridity can be compensated by irrigation. By overcoming a moisture deficit of up to 150 mm from May to September, a farm operator could expect to improve a basic class

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* Data in Table 1 are derived from the period 1951-1980, Atmospheric Environment Service stations (except Pine 4500, Tay Moore low, and Rut mid. stations operated by Air Studies Branch, British Columbia Ministry of Environment).

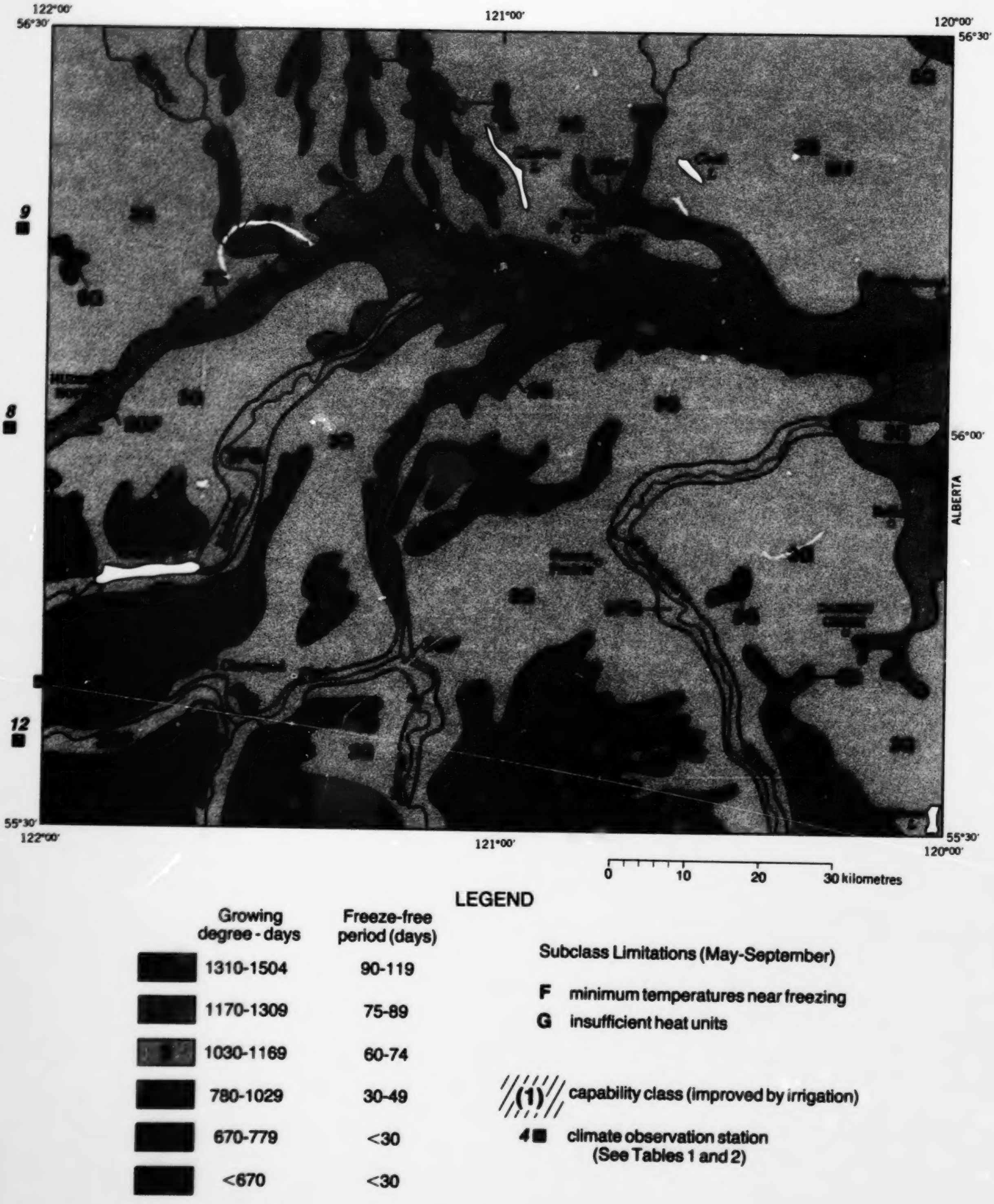

122°00′
56°30′
121°00′
120°00′
56°30′
9
8
12
56°00′
ALBERTA
55°30′
122°00′
121°00′
55°30′
120°00′
0
10
20
30 kilometres
LEGEND
Growing degree - days
Freeze-free period (days)
1310-1504 90-119
1170-1309 75-89
1030-1169 60-74
780-1029 30-49
670-779 <30
<670 <30
Subclass Limitations (May-September)
F minimum temperatures near freezing
G insufficient heat units
(1) capability class (improved by irrigation)
4 climate observation station (See Tables 1 and 2)

Figure 5. Climatic capability classes for agriculture

Table 1. Selected climatic data

Station Name	Number*	Location	Elev. (m)	Mean temperature(°C) Annual	 January	 July	Mean precipitation(mm) Annual	 May-Sept.	Growing degree-days†	Freeze-free period≠ (days)	Average annual snowfall (cm)	Climatic moisture balance+ (mm)
East of Rockies (in Peace River valley)												
Taylor Flats	3	5610 N 12041 W	518				432	265			145	
Tay Moore low		5608 N 12038 W	460	1.6	-18.4	16.9			1395	105●		
Rut mid.		5607 N 12146 W	475	1.9	-16.8	16.2			1320	101●		
(on the plateau)												
Dawson Creek Airport	6	5544 N 12012 W	655	0.9	-18.2	15.1	504	289	1127	78	188	-32
Chetwynd BCFS	5	5542 N 12137 W	660	2.0	-15.1	15.4	467	250	1132	97	189	-73
W.A.C. Bennett Dam	8	5601 N 12212 W	678	1.9	-15.3	15.3	551	327	1156	109	194	+35
Baldonnel		5416 N 12041 W	686	1.0	-18.0	15.3	477	279	1174	97	183	-28
Fort St. John Airport	7	5614 N 12044 W	694	1.3	-17.7	15.6	493	284	1223	115	222	+22
Cecil Lake		5620 N 12017 W	773	0.6	-18.0	14.9	504	261	1054	107	206	+9
Within Rockies												
Mt. Lemoray		5532 N 12229 W	680	2.5	-12.8	14.1	810●	340●	1078	96●	400●	+56●
Pine Pass		5521 N 12236 W	945	0.8	-15.1	13.5	1916	533	810	79	1076	+299
Pine 4500	13	5539 N 12202 W	1363	-0.4	-15.6	11.1			587	48●		

*refer to Fig. 5.
†Growing degree-days: degree-days accumulated above 5°C.
≠Freeze-free period: days above 0°C.
+Climatic moisture balance: moisture deficit (-) or surplus (+).
●Estimate.

Reference: Personal communication, G.E. Cheesman, Waste Management Branch, British Columbia Ministry of Environment.

Table 2. Climatic capability classes in interior British Columbia

	Freeze-free period (base 0°C) (days)	Growing degree-days (above 5°C)	Moisture deficit or (mm)	Moisture surplus potential evapotranspiration ratio (PET) (mm)
Class 1	90-119	1310-1504	up to 40	< 0.33
Class 2	75-89	1170-1309	40-115	0.34-0.55
Class 3	60-74	1030-1169	116-190	0.56-0.75
Class 4	50-59	1030-1169	191-265	0.76-1.00
Class 5	30-49	780-1029	266-340	> 1.00
Class 6	< 30	670-779	341-415	
Class 7	< 30	< 670	> 415	

3A (aridity) rating to class (1) in the Peace River valley and to class (2) in the lower Moberly River valley.

Not considered in the climatic classification are the longer days found at the latitude of the survey area as compared with areas to the south. These longer days during the agricultural growing season increase the capability to grow many crops. Cheesman and Davis (1982) have shown how longer days can potentially better the agricultural capability in the Peace River valley.

SOILS AND MAP UNITS

SOIL SURVEY METHODS AND MAPPING PROCEDURES

The soil surveys conducted under the Canada Land Inventory (1965) had a common objective and well-defined guidelines that have been followed in preparing this report (Canada Expert Committee on Soil Survey 1983). For detailed accounts of survey methods and mapping procedures used, interested readers or users unfamiliar with soil reports are referred to A Soil Mapping System for Canada: (Revised) (Agriculture Canada 1981), The Soil Landscapes of British Columbia (Valentine et al. 1978), and to recent soil survey reports in British Columbia.

Early soil surveys (Plate 1a) in the Peace River regions of British Columbia (Farstad et al. 1965) and Alberta (Odynsky and Newton 1950; Odynsky et al. 1952, 1961) classified the soils on the basis of soil series, defined at that time as soils developed on similar parent materials in similar environments. Soils derived from similar materials and differing in characteristics caused by variations in relief, drainage, and vegetation were then placed into nontaxonomic groupings, referred to as catenas. Later soil surveys (Lord and Green 1973) and biophysical soil resource surveys (Vold et al. 1977) used a similar grouping, the soil association. Soils in the present report are classified and defined according to guidelines established by the Canada Soil Survey Committee (1978).

This report correlates and synthesizes these mapping methods by representing, on the soil maps and in the legend, parts of the soil landscapes as map units. Table 3 summarizes the characteristics of the soils of the map units described and delineated in the report area. The map unit symbol shows the named and defined soils, their subdivisions or phases, or a combination of these. Each map unit is listed and named in the legend. The topographic phase is not considered a fixed part of the map unit.

Table 3. Characteristics of soils of the map units

Landform and Material	Name	Map Unit	Textural* Class	Water+ Regime	Classification	Remarks
MORAINAL						
Gray and grayish brown loamy to clayey, weakly calcareous and saline till		AC	cl-c	D3 P2	Orthic Gray Luvisol	Solonetzic intergrades have tough, coated, Btnj horizons and low ratios of exchangeable Ca:Na
		AC-	cl-c	D3 P2	Orthic Gray Luvisol	BU soils occupy low-lying, poorly drained depressions; the profile has a peaty surface and a mottled subsoil
		BU	c	D5 P3	Orthic Luvic Gleysol	
		AC-	cl-c	D3 P2	Orthic Gray Luvisol	CL soils are on gravelly, sandy, beach deposits of proglacial lakes at shoreline elevations near 850 m
		CL	gl	D3 P2	Orthic Gray Luvisol	
		AC-	cl-c	D3 P2	Orthic Gray Luvisol	Loamy veneers 30-60 cm thick overlying clayey materials, characterize CO soils on shoreline or deltaic deposit
		CO	$\frac{l}{c}$	D3 P3	Orthic Gray Luvisol	
	ALCAN	AC-	cl-c	D3 P2	Orthic Gray Luvisol	Weakly stratified morainal materials (lacustrotill) include DO soils with dense compact subsoils
		DO	cl-c	D3 P2	Solonetzic Gray Luvisol	
		AC-	cl-c	D3 P2	Orthic Gray Luvisol	Black Solods with thick, well-developed Ah horizons occur with MU soils on open, parkland sites
		MU	cl-c	D2 P2	Dark Gray Solod	
		AC-	cl-c	D3 P2	Orthic Gray Luvisol	SH soils are associated with Eutric Brunisols on shallow, often stony materials on ridges and escarpments
		SH	l-cl	D1 P1	Orthic Gray Luvisol	
		AC-	cl-c	D3 P2	Orthic Gray Luvisol	SN soils occupy low-lying, poorly drained depressions; the soil has a peaty surface and a mottled subsoil
		SN	c	D5 P3	Orthic Luvic Gleysol	
	MURDALE	MU	cl-c	D2 P2	Dark Gray Solod	Associated with Black Solods on open grassy till ridges
		MU-	cl-c	D2 P2	Dark Gray Solod	Lacustrotill occurs with till near shoreline areas of proglacial lakes
		ES	c-cl	D3 P2-3	Dark Gray Solod	
	SNIPE	SN	c	D5 P3	Orthic Luvic Gleysol	On nearly level land with gleyed soils and Organics
Gray and dark gray clayey till and shale, acid and saline	BOUNDARY	BD-	c	D3 P3	Orthic Gray Luvisol	
		BU	c	D5 P3	Orthic Luvic Gleysol	Extremely acid soils with very low base saturation
	BUICK	BU	c	D5 P3	Orthic Luvic Gleysol	On level to very gentle slopes associated with gleyed soils and Organics
Grayish brown and yellowish brown loamy and clayey, weakly calcareous, gravelly and cobbly till	DEMMITT	DM-	cl-c	D3 P3	Orthic Gray Luvisol	On upper slopes of the till plain in a few localized areas near Pouce Coupe
		CO	l-c	D3 P2	Orthic Gray Luvisol	
	FELLERS	FE1	cl-c	D2 P2-3	Brunisolic Gray Luvisol	The till blanket is calcareous below 100 cm in depth

Table 3. Characteristics of soils of the map units (continued)

Landform and Material	Name	Map Unit	Textural+ Class	Water+ Regime	Classification	Remarks
Grayish brown and yellowish brown loamy and clayey, weakly calcareous, gravelly and cobbly till	FELLERS	FE2	sl-c	D2 P2-3	Lithic Brunisolic Gray Luvisol	The till veneer (<1 m) occurs generally at elevations >900 m
		FE- KS	cl-c cl-c	D2 P2-3 D3 P3	Brunisolic Gray Luvisol Brunisolic Gray Luvisol	KS parent material is lacustrotill occuring with till at high elevations in the southeast
		FE- MO	cl-c cl	D2 P2-3 D3 P3	Brunisolic Gray Luvisol Brunisolic Gray Luvisol	Calcareous MO soils occur with Fellers on steep valley slopes
		FE- SH	cl-c c-cl	D2 P2-3 D5 P3	Brunisolic Gray Luvisol Orthic Luvic Gleysol	Occupies large areas of nearly level tablelands near elevations of 900 m
	HANSHAW	HA	cl-c	D3 P3	Solonetzic Gray Luvisol	The clay-textured Btnj horizons are very hard, coated, and have low Ca:Na ratios
		HA- CN	cl-c sil-sl	D3 P3 D4-5 P3	Solonetzic Gray Luvisol Rego Humic Gleysol	Occupies cool headwater valleys of tributary streams near Fellers Heights
		HA- SH	cl-c c	D3 P3 D5 P3	Solonetzic Gray Luvisol Orthic Luvic Gleysol	Associated with HA-CN unit on gentle to moderate slopes
Gray and grayish brown loamy, calcareous, cobbly till	HAMBROOK	HB- RB	cl gsl-l	D2 P2-3 D2 P2	Brunisolic Gray Luvisol Eluviated Eutric Brunisol	Occupies variable areas at high elevations in the foothills
	MOBERLY	MO1	cl-l	D2-3 P2-3	Brunisolic Gray Luvisol	Calcareous cordilleran till > 1 m thick; the till may be capped with up to 15 cm of sandy material
		MO2	cl-l	D2 P2	Brunisolic Gray Luvisol, lithic phase	Shallow till veneer < 1 m thick
		MO- CN	cl-l sil-sl	D2-3 P2-3 D4-5 P3	Brunisolic Gray Luvisol Rego Humic Gleysol	In small side valleys off Moberly Lake and the upper Pine Valley
		MO- CY	cl-l gsl-gls	D2-3 P2-3 D1 P1	Brunisolic Gray Luvisol Eluviated Eutric Brunisol	Thin gravelly veneers on till ridges
		MO- HS	cl-l gl-gsl	D2-3 P2-3 D2 P1-2	Brunisolic Gray Luvisol Eluviated Dystric Brunisol	Colluvium mixed with till on steep, high-elevation slopes
		MO- LY	cl-l sil-l	D2-3 P2-3 D2 P2	Brunisolic Gray Luvisol Brunisolic Gray Luvisol	Glaciolacustrine silts are associated with till
		MO- SQ	cl-l gl-gsl	D2-3 P2-3 D2 P1-2	Brunisolic Gray Luvisol Eluviated Dystric Brunisol	Till mixed with noncalcareous colluvium overlying sandstone and shales
	ROBB	RB	gsl-l	D2 P2-3	Eluviated Eutric Brunisol	Similar to Hambrook but coarser textured

Table 3. Characteristics of soils of the map units (continued)

Landform and Material	Name	Map Unit	Textural* Class	Water+ Regime	Classification	Remarks
LACUSTROTILL	DONNELLY	DO	cl-c	D3 P3	Solonetzic Gray Luvisol	Occurs with Dark Gray Solods on the lower slopes of the plateau
		DO-	cl-c	D3 P3	Solonetzic Gray Luvisol	Peaty Gleysols are common associates on gently undulating topography
		SN	c	D5 P3	Orthic Luvic Gleysol	
	ESHER	ES	cl-c	D3 P2-3	Dark Grey Solod	Eluviated Black soils and Black Solods are prominent on drier open slopes
		ES-	cl-c	D3 P2-3	Dark Gray Solod	Associated with silty fluvial veneers 15-75 cm thick clayey deposits; Black Solods are common
		PE	sil sc	D2 P3	Eluviated Black	
Gray and dark grayish brown loamy to clayey, calcareous and saline	GOOSE	GO	c	D5 P3	Orthic Humic Gleysol	Commonly with other Gleysols and Organics in depressions and drainageways
	HAZELMERE	HZ	cl-sl-c	D4 P3	Solonetzic Gray Luvisol	Black Solods are common on southerly aspects of slopes on the plateau
		AB	cl-sl-c	D2 P3	Dark Gray Solod	
		HZ-	cl-sl-c	D4 P3	Solonetzic Gray Luvisol	
		DM	cl-c	D3 P3	Orthic Gray Luvisol	Inclusions of till and shoreline gravels
		HZ-	cl-sl-c	D4 P3	Solonetzic Gray Luvisol	Poorly drained soils such as SN and GO occur with some FE soils
		SN		D5 P3	Orthic Luvic Gleysol	
GLACIOLACUSTRINE Gray and grayish brown loamy to clayey, slightly saline	BEATTON	BT	cl-sic	D2-3 P2-3	Orthic Gray Luvisol	Dark Gray Solods are common associates on open grass and shrub sites
	ROSELAND	RO-	c	D3 P3	Black Solod	FA soils are less saline and more calcareous than Roseland
		FA	cl-c	D3 P3	Dark Gray Solod	
	DEVEREAU	DU	sil-sicl	D2 P1-2	Dark Gray Luvisol	Gray Solods and Solonetzic Gray Luvisols are common
		DU-	sil-sicl	D2 P1-2	Dark Gray Luvisol	Gleysols and gleyed soils occur on level sites among better drained mounds
		CD	sil sic	D5 P3	Orthic Luvic Gleysol	
		DU-	sil-sicl	D2 P1-2	Dark Gray Luvisol	Associated with saline soils on till
		HA	cl-c	D3-4 P3	Solonetzic Gray Luvisol	
Gray loamy and clayey, strongly calcareous weakly saline		DU-	sil-sicl	D2 P1-2	Dark Gray Luvisol	Complex of glaciolacustrine, fluvial, and organic materials in the upper Kiskatinaw Valley
		KZ	(moss peat)	D6 P3	Terric Mesisol sphagnic	
	ROLLA	RL-	sil-sicl	D3 P3	Black Solod	Intricate pattern of Solonetzic and Luvisolic soils on ridges and mounds
		RY		D3-4 P3	Black Solodized Solonetz	

Table 3. Characteristics of soils of the map units (continued)

Landform and Material	Name	Map Unit	Textural* Class	Water* Regime	Classification	Remarks
Gray and dark gray clayey, moderately calcareous weakly saline	FALHER	FA	c	D3-4 P3	Dark Gray Solod	Black Solods occur in the unit; Bnt horizons overlie calcareous and saline horizons
		FA-	c	D3-4 P3	Dark Gray Solod	JU associates are brown colored, friable, and more calcareous than FA
		JU	l-c	D2 P2	Dark Gray Luvisol	
		FA-	c	D3-4 P3	Dark Gray Solod	On gentle slopes with Gleysols and Organics
		NP	c	D4 P3	Gray Solod	
Brown, silty to clayey, moderately calcareous	JUDAH	JU	sicl-sic	D2 P2	Dark Gray Luvisol	Brownish colored soils on mounded, "humpie" landforms
		JU-	sicl-sic	D2 P2	Dark Gray Luvisol	Gleysols and Organics occupy most of the level and depressional sites between mounds
		GO	c	D5 P3	Orthic Humic Gleysol	
	KATHLEEN	KT-	sil-sicl	D2 P2	Orthic Gray Luvisol	Irregular, hummocky topography is the characteristic landform
		JU	l-c	D2 P2	Dark Gray Luvisol	
		KT-	sil-sicl	D2 P2	Orthic Gray Luvisol	The more finely textured, more saline NP soils occur with Gleysols and Organics
		NP	c	D4 P3	Gray Solod	
GLACIOFLUVIAL						
Grayish and grayish brown variable, loamy, strongly calcareous	CENTURION	CE	l	D5 P3	Rego Humic Gleysol	The soils have thick calcareous Ah horizons
	CODNER	CN	sil-sl	D4-5 P3	Rego Humic Gleysol	Peaty surfaces are common
	DAVIS	DV-	l	D2-3 P2	Orthic Gray Luvisol	Poorly drained soils are common
		CD	sil/sic	D5 P3	Orthic Luvic Gleysol	
		DV-	l	D2-3 P2	Orthic Gray Luvisol	An irregular hummocky landform is characteristic
		SU	s	D1-2 P1-2	Brunisolic Gray Luvisol	
	LYNX	LY-	l	D2 P2	Brunisolic Gray Luvisol	Similar to the soils of the DV-CD unit
		EG	(sedge peat)	D6 P3	Terric Mesisol	
		LY-	l	D2 P2	Brunisolic Gray Luvisol	Similar to the landform of the DV-SU unit
		SU	s	D1-2 P1-2	Brunisolic Gray Luvisol	
	WIDMARK	WI	l	D3 P2	Eluviated Eutric Brunisol	Often as stratified ponded deposits
		WI-	l	D3 P2	Eluviated Eutric Brunisol	Level areas on valley floors, associated with Gleysols and gleyed soils
		CE	l	D5 P3	Rego Humic Gleysol	
Variable, sandy and gravelly materials, often underlain by gravel, moderately calcareous	CLAYHURST	CY	gs	D1-2 P1	Eluviated Eutric Brunisol	Similar to Neumann soils but occur in a warmer environment
	NEUMANN	NE	gs	D1-2 P1	Eluviated Dystric Brunisol	Confined to foothills and benchlands
		NE-	gs	D1-2 P1	Eluviated Dystric Brunisol	CN and other Gleysols comprise much of the unit
		CN	sil-sl	D4-5 P3	Rego Humic Gleysol	

Table 3. Characteristics of soils of the map units (continued)

Landform and Material	Name	Map Unit	Textural* Class	Water+ Regime	Classification	Remarks
Variable, sandy and gravelly materials, often underlain by gravel, moderately calcareous	PORTAGE CREEK	PT	gs	D1-2 P1	Eluviated Eutric Brunisol	Similar to Clayhurst soils but in a cooler environment
	SUNDANCE	SU	s	D1-2 P1-2	Brunisolic Gray Luvisol	Gravel phases and pitted outwash landforms are common
		SU- CD	s sil/sic	D1-2 P1-2 D5 P3	Brunisolic Gray Luvisol Orthic Luvic Gleysol	Gleysols such as CD and CE occupy level sites
		SU- KZ	s (moss peat)	D1-2 P1-2 D6 P3	Brunisolic Gray Luvisol Terric Mesisol, sphagnic	Almost 50% of the unit may be Organic soils such as Kenzie and Eaglesham
Thin (10-60 cm) sandy and loamy veneers over clayey deposits, calcareous	BERYL	BY- CD	l/c sil/sic	D3 P3 D5 P3	Brunisolic Grey Luvisol Rego Humic Gleysol	This minor map unit contains significant amounts of CD soils
		BY- GD	l/c c	D3 P3 D5 P3	Brunisolic Gray Luvisol Orthic Humic Gleysol	North of Hudson Hope in areas of peaty phases and Organics
		BY- LY	l/c l	D3 P3 D2 P2	Brunisolic Gray Luvisol Brunisolic Gray Luvisol	Silty veneers occur with deeper loamy glaciofluvial materials
		BY- MO	l/c cl-l	D3 P3 D2-3 P2-3	Brunisolic Gray Luvisol Brunisolic Gray Luvisol	Much of this unit is on drumlinized landforms thinly covered with fluvial deposits
		BY- SU	l/c s	D3 P3 D1-2 P1-2	Brunisolic Gray Luvisol Brunisolic Gray Luvisol	Sandy and loamy materials on rolling topography
	SLOANE	SL	s/c	D2 P2-3	Orthic Gray Luvisol	The thick leached Ae horizon is developed in the thin fluvial veneer
		SL- CD	s/c sil/sic	D2 P2-3 D5 P3	Orthic Gray Luvisol Rego Humic Gleysol	Poorly drained Gleysols, Organics and peaty phases are common
	CODESA	CO- DO	l/c cl-c	D3 P3 D3 P3	Orthic Gray Luvisol Solonetzic Gray Luvisol	The two dominant soils are quite similar but Codesa soil is shallower and less saline
		CO- SN	l/c c	D3 P3 D5 P3	Orthic Gray Luvisol Orthic Luvic Gleysol	Gleysols occur frequently on till and lacustrotill materials
	KOBES CREEK	KO- BY	l/c l/c	D2 P3 D2 P3	Brunisolc Gray Luvisol Brunisolic Gray Luvisol	Thin fluvial veneers overlie both acidic and basic materials
FLUVIAL						
Floodplains	ALLUVIAL	AL	s-l	D1-5 P1-3	Cumulic Regosol	Variable undifferentiated floodplain deposits
	BEAR FLAT	BF1	s-l	D2-3 P1-2	Cumulic Regosol	Deep fine sands over gravel on the islands and floodplain of the Peace River
		BF2	gs	D2-5 P1-3	Regosol	Gravel bars of the Peace River
	MEIKLE CREEK	ME	s	D2 P1	Cumulic Regosol	Non calcareous sandy deposits of the upper Pine and Moberly rivers
		ME- EG	s (sedge peat)	D2 P1 D6 P3	Cumulic Regosol Terric Mesisol	EG soils and Gleysols are common in this large unit west of Moberly Lake
		ME- PT	s gs	D2 P1 D1-2 P1	Cumulic Regosol Eluviated Eutric Brunisol	Variable amounts of gravel occur on terraces above the floodplain of the Pine River
	DEICA	DE	s	D1-2 P1	Cumulic Regosol	Calcareous sandy deposits of the lower Sukunka and Murray rivers
		DE- WI	s l	D1-2 P1 D3 P2	Cumulic Regosol Eluviated Eutric Brunisol	Sandy and silty terrace deposits near Chetwynd

Table 3. Characteristics of soils of the map units (concluded)

Landform and Material	Name	Map Unit	Textural* Class	Water* Regime	Classification	Remarks
COLLUVIAL						
Sandy to clayey fans and intermediate terraces	BRANHAM	BR	s-l	D2 P1	Orthic Eutric Brunisol	Soils are on secondary terraces above the floodplain
		BR- CY	s-l gs	D2 P1 D1-2 P1	Orthic Eutric Brunisol Eluviated Eutric Brunisol	Gravels occur as surface materials or as a shallow substrate under loamy deposits
	PINGEL	PG- CY	c gs	D3 P3 D1-2 P1	Eluviated Eutric Brunisol Eluviated Eutric Brunisol	Clayey erosion products associated with terrace gravels on northerly aspects in the Peace valley
	TAYLOR	TY	c	D2-3 P3	Rego Black	Clayey fan deposits on southerly aspects in the Peace valley
Variable materials on steep valley and mountain slopes	ATTACHIE	AH	s-c	D1-4 P1-3	Regosol	Undifferentiated valley slopes, southerly facing under grass and shrub cover
	HORSESHOE	HS	gl-gs	D2 P1-2	Eluviated Dystric Brunisol	Regosols and lithic phases occur on upper slopes; gleyed soils on toeslopes
	SEPTIMUS	SS	s-c	D1-4 P1-3	Regosol	Undifferentiated valley slopes, northerly aspects, mainly forested
		SS- AH	s-c s-c	D1-4 P1-3 D1-4 P1-3	Regosol Regosol	Intermediate aspects of valley slopes
	ZONNEBECKE	ZB	l	D2-3 P1-2	Eluviated Eutric Brunisol	Very steep, sparsely treed valley slopes of the benchlands
ORGANIC						
Sedge fen and moss bog deposits	EAGLESHAM	EG	(sedge peat)	D6 P3	Terric Mesisol	Peaty materials derived mainly from sedges, grasses, and shrubs
		EG- SH	(sedge peat) c	D6 P3 D5 P3	Terric Mesisol Orthic Luvic Gleysol	Mainly shallow organic deposits associated with Gleysols
	KENZIE	KZ	(moss peat)	D6 P3	Terric Mesisol, sphagnic phase	Peaty materials derived mainly from sphagnum and other mosses, trees, and shrubs
		KZ- SU	(moss peat) s	D6 P3 D1-2 P1-2	Terric Mesisol, sphagnic phase Brunisolic Gray Luvisol	Sand dunes and hummocks with depressional areas of organic materials
ROCKLAND						
	ROCKLAND	RK				Mainly bare rock outcrop covered with < 10 cm of soil material

Texture Classes*

s - sandy
ls - loamy sand
sl - sandy loam
l - loam
sil - silt loam
sicl - silty clay loam
cl - clay loam
c - clay
g - gravelly
($\frac{l}{c}$ - loam overlying clay)

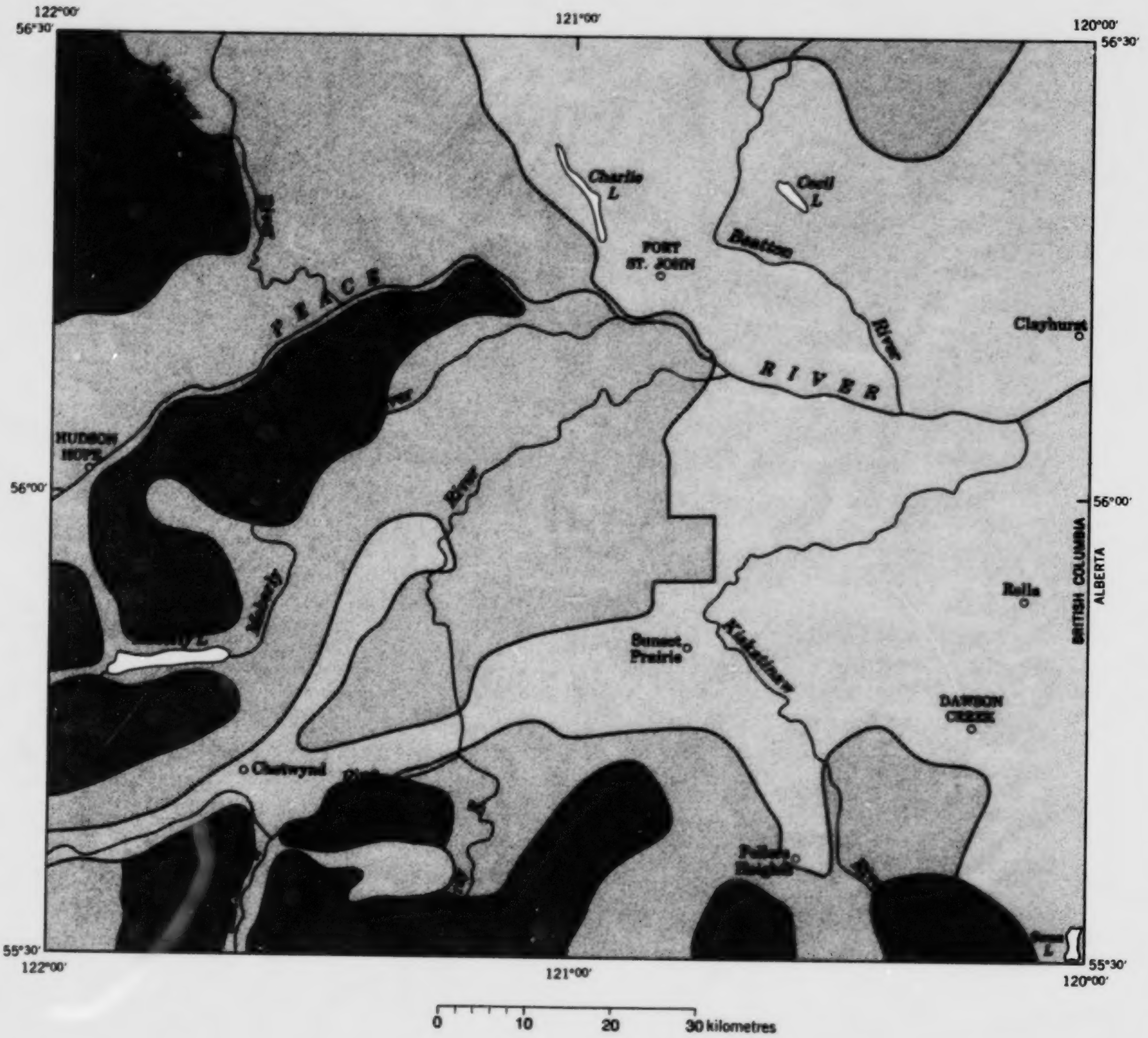
Water Regime*

Drainage Classes

D1 - rapidly drained
D2 - well drained
D3 - moderately well drained
D4 - imperfectly drained
D5 - poorly drained
D6 - very poorly drained

Perviousness Classes

P1 - rapidly
P2 - moderately pervious
P3 - slowly pervious


122°00'
56°30'
121°00'
120°00'
56°30'
Charlie L
Cecil L
FORT ST. JOHN
Beatton River
Clayhurst
PEACE RIVER
HUDSON HOPE
56°00'
56°00'
River
Moberly
L
Sunset Prairie
Kiskatinaw
Rolla
BRITISH COLUMBIA
ALBERTA
DAWSON CREEK
Chetwynd
Pine
Heights
L
55°30'
122°00'
121°00'
55°30'
120°00'
0
10
20
30 kilometres

LEGEND

░	GOOD	dense to adequate road pattern
▒	FAIR	moderate to sparse roads and trails
■	POOR	very few roads - requires checks by helicopter, pack horse or A.T. vehicle

Figure 6. Accessibility guide for field checking

There are two types of map units: single and compound. A single map unit contains only one dominant soil (or land type) e.g. Moberly (MO). A compound map unit contains two prominent soils (and minor inclusions of other soils or land types). An example would be Moberly-Clayhurst (MO-CY) consisting of dominantly deep, moderately well drained soils (MO) derived from loamy calcareous till, with significant amounts of rapidly drained, gravelly sandy soils (CY) derived from glaciofluvial materials. For definitions of terms used in soil science refer to the footnotes on the soil maps or to Glossary of Terms in Soil Science (Canada Soil Survey Committee 1976).

The first soil surveys in the Peace River area were described as a detailed reconnaissance of the main agricultural area and a broad reconnaissance of the more remote undeveloped areas. Traverses were made by car, on foot, and on horseback. Later surveys employed helicopters, four-wheel-drive trucks, and all-terrain vehicles. Figure 6 provides a broad assessment of present-day accessibility to field checking. This soil report and its accompanying maps attempt to update the soils resource information available in the map area and to present it simply and briefly to a wide range of users.

DESCRIPTION OF SOILS AND MAP UNITS

The soils are described (Table 3) by name, alphabetically, in this main body of the report. The section that follows provides detailed information on each map unit, which is described briefly in the expanded legend that appears on the soil maps. Background information is provided on geographical distribution, associated vegetation and climate, parent materials, and characterisics of the dominant soils or land types. In many cases, the land use and the land capabilities of important map units are discussed.

Alcan map units (178 005 ha)

Alcan (AC) map units are dominated by Orthic Gray Luvisols on loamy and clayey till of continental origin. The eight map units in which Alcan soils predominate are distributed across the plateau uplands that lie east of the Halfway and Kiskatinaw rivers. The Alcan map units occupy 12.8% of the map area.

The morainal landform is composed mainly of a loamy-to clayey-textured till blanket occurring at elevations near 750 m, or a veneer overlying sandstone on the higher plateau ridges. The till is grayish brown, weakly calcareous, slightly saline, and slightly to moderately stony. Topography ranges from gentle to moderate slopes to steep and very steep slopes in the various map units.

Most of the units occur in class 3 agricultural climate, where the May to September growing period has a range from 1030 to 1169 growing degree-days. Class 5 climate, with 30-40 frost-free days and 780-1029 growing degree-days prevails above an elevation of approximately 820 m. Although trembling aspen, willows, and alder form the present vegetative cover, white spruce occurs on sites that have long been free from repeated fires.

Alcan soils are moderately well drained, are moderately pervious, and have a perhumid to humid water regime. The soil profile shows a thick gray Ae horizon over a more finely textured Bt horizon. The solum grades down through strongly acidic transition horizons to accumulations of lime and gypsum salts at depths of 180 cm or more. Alcan soils generally have the chemistry and morphological characteristics of strongly developed Orthic Gray Luvisols. Occasionally, B horizons will have the structure and chemistry of a Btnj horizon, indicating an intergrade to the Solonetzic order. A description and an analysis of an Orthic Gray Luvisol are given in the Appendix. Alcan soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

Problems associated with high acidity and low fertility, as well as the physical characteristics of Ae horizons that lead to compaction, crusting, and puddling of cultivated surfaces, have somewhat impeded the agricultural development of the Alcan soils. Although white spruce (Plate IIb) and lodgepole pine can produce 5.0-6.3 m^3/ha per year (class 3) on Alcan soils, only limited use is made of these soils in forestry.

AC Alcan (11 064 ha): Delineations of this map unit occur near Goodlow and Charlie Lake. The gently to strongly sloping unit is made up of moderately well drained Alcan soils, with minor inclusions of gleyed soils and Gleysols. Cereal grains, forage crops, and oil seed crops are grown.

AC-BU Alcan-Buick (46 200 ha): Large areas of the AC-BU unit occur east of Cecil Lake on moderately sloping lands near 750 m elevation. Here the soils are rated class 4 and 3 for agricultural capability. Along the Alaska Highway northwest of Charlie Lake, where elevations approach 900 m, the severe limitations of climate restrict agriculture to the growth of perennial forage crops. Imperfectly drained and poorly drained Gleysols (Buick) may constitute 40% of the map unit and occupy cold frosty sites in low-lying depressions.

AC-CL Alcan-Clouston (15 570 ha): The few areas of this map unit are confined mainly to moderately sloping lands west of Charlie Lake, south of Dawson Creek, and near Bessborough. The AC-CL unit contains 30-60% Clouston soils (Eutric Brunisols or weakly expressed Gray Luvisols on gravelly shoreline materials of postglacial lakes) and some lithic phase soils (Shearerdale).

AC-CO Alcan-Codesa (18 560 ha): This map unit occurs mainly near Baldonnel and south of the Peace River on moderately sloping lands near 750 m elevation. Although Codesa soils, which make up about 30% of the map unit, tend to be more variable in surface textures and are less acidic than Alcan soils, they have similar capabilities for agriculture and forestry.

AC-DO Alcan-Donnelly (36 156 ha): Although the Donnelly soils are developed from parent materials that are more calcareous and somewhat more heavily textured than Alcan soils, their capabilities for agriculture and forestry are similar in this map unit. Donnelly soils occupy as much as 50% of the unit in areas near Clayhurst and south of the Peace River to Farmington.

AC-MU Alcan-Murdale (18 147 ha): The soils of the AC-MU map unit occur mainly on very strongly sloping, high elevation lands to the west of Charlie Lake and north of Fort St. John. Murdale soils, with relatively thick, dark-colored Ah horizons, make up 30-40% of the map unit. The semiopen nature of the vegetative cover allows for some grazing by domestic livestock and browsing by deer. Cereal grains and forage crops are produced on the moderately sloping lands. The unit has limited value for forestry.

AC-SH Alcan-Shearerdale (11 995 ha): The soils of this unit include about 40% stony and shallow Shearerdale soils with some Rockland. The map unit lies at relatively high elevations near the Cameron River and occurs as scattered areas south of the Peace River. Although agricultural use is confined to grazing and pasture, forestry capability for white spruce and lodgepole pine is moderately high (class 3 or 4).

AC-SN Alcan-Snipe (20 313 ha): Poorly drained Snipe soils constitute about 30% of this map unit, which occupies uplands to the west and north of Dawson Creek. Other soils such as Donelly and Hanshaw may be present. Such factors as low permeability, a high water table, and susceptibility to frostiness in the poorly drained sites occupied by Snipe soils adversely affect the agricultural capability of the unit.

Alluvial map unit (21 387 ha)

The Alluvial (AL) map unit includes the undifferentiated, sandy, silty, loamy, and often gravelly fluvial deposits of the active floodplains of rivers and streams. Regosolic soils dominate the map unit.

Included are all recently deposited fluvial soils except those named in map units of the following major drainage systems: the Bear Flat soils of the Peace River, the Oetca soils of the Sukunka and Murray river floodplains, and Meikle Creek soils of the upper Pine River valley. The Alluvial map unit occupies 1.5% of the map area.

AL Alluvial (21 387 ha): This map unit includes dominantly Cumulic Regosols occurring on undifferentiated river and stream floodplains, islands, and low terraces. Although most areas are nearly level, soil texture and drainage may be extremely variable.

Dependent on climate and other limitations such as adverse soil properties, flooding hazard, and adverse topography, the agricultural capability of the Alluvial map unit ranges from class 2 to class 7.

Soils of the map unit support a wide range of trees, shrubs, forbs, and grasses. The productivity of black cottonwood frequently exceeds 10.5 m^3/ha per year in some areas. The Alluvial map unit and associated valley slopes (Attachie and Septimus map units) provide critical wintering areas for wild ungulates throughout the map area.

Attachie map unit (19 243 ha)

The Attachie (AH) map unit consists of undifferentiated colluvial materials and soils on very steep slopes along river valleys. The materials include loamy tills and shale, and sandstone bedrock that may be mantled with combinations of glaciofluvial gravels, sands, silts, loess, and colluvium. Slumps and active erosion are common geological failing processes.

Regosols and lithic phases of Chernozemic soils characterize this grass- and shrub-covered map unit on southerly aspects above the main rivers and their tributaries. The Attachie map unit occupies 1.4% of the map area.

AH Attachie (19 243 ha): The Attachie map unit occupies south-facing valley slopes above the floodplain of the Peace River and its major tributaries, the Halfway, Beatton, Alces, Pine, and Moberly rivers. Owing to instability and steep irregular topography, agricultural and forestry uses are severely limited on the AH unit. In some areas, the open slopes support some domestic grazing. The greatest value probably lies in the use of the unit by deer and moose as their prime winter habitat.

Bear Flat map units (7674 ha)

Bear Flat (BF) map units are identified in that part of the Peace River floodplain extending from the Peace Canyon Dam near Hudson Hope downstream to the British Columbia-Alberta border near Clayhurst. The map units are dominated by Regosols on weakly calcareous sands, loams, and gravels. The Bear Flat map units occupy less than 1% of the map area.

The floodplain deposits consist of weakly calcareous sands 1-3 m thick over channel gravels. A recent study (Church et al. 1982) on the effects of the decrease in the flow of the Peace River since damming in 1968 indicates some accumulation of sediment rather than degradation effects, and general stabilization and modification of plant communities. Accretion of sand and silt to gravel bars adjacent to main tributaries (Halfway, Kiskatinaw, Pine, and Beatton rivers) provides a substrate for pioneer plants. With peak flows now reduced by about half, back channels are being abandoned, and their courses have become less meandering.

A detailed climate study (Cheesman and Davis 1982) indicates a class 3A rating (improving to class 1 under irrigation) (Fig. 5) in climatic capability for agriculture in the Peace River valley. Near Hudson Hope the climate capability is lowered to class 2GF because of the presence of cooler air from the nearby foothills. The May to September precipitation is about 250 mm. The capability to ripen corn crops on units of Bear Flat soils near Taylor places the valley of the Peace River in a unique position within the northern two-thirds of British Columbia.

Black cottonwood, alder, and white spruce are the most common trees on floodplain soils; common red-osier dogwood and willows constitute the dominant shrubs. Because annual deposition of sediment is now practically eliminated or curtailed, many gravel bars are being vegetated, and on some higher lands certain shrub and tree species may be eliminated or reduced (Church et al. 1982).

The soils of the Bear Flat 1 map unit usually have L-F and Ah horizons; they may have thin Bmj horizons of fine sandy loam or silt loam texture, and the texture of the C horizon ranges from fine sandy loam to fine sand. Soil horizon differentiation in the newly established fluvial materials can be expected to increase over time. The soils are generally well drained. The profile description and analyses of two selected Bear Flat soils are given in the Appendix. The importance and extent of the Bear Flat soils were not known prior to stabilization of river flow by the damming in 1968.

BF1 Bear Flat 1 (5156 ha): The BF1 unit is dominated by Cumulic Regosols on deep fine sands. Topography is mainly nearly level or gently undulating.

In spite of a short-term flood reserve on these alluvial lands, productive market gardens are being developed on cleared lands adjoining the Peace River bridge at Taylor and on terraces downriver.

Most areas of the BF1 map unit in the floodplain were rated (prior to regulation of the river flow at W.A.C. Bennett Dam) as forest capability class 1 for black cottonwood. Productivity is usually greater than 9.2 m^3/ha per year. Lands in the BF1 unit provide moderately high to high capability for recreation based on activities such as boating, fishing, and camping. The native cover provides an abundance of food plants and important winter range for deer and moose.

BF2 Bear Flat 2 (2518 ha): The BF2 map unit is composed of abandoned back channels and cobble and gravel bars often thinly veneered with fine-loamy sediments. These areas of recent deposition have no distinctly formed soils. Areas of the BF2 unit usually provide a valuable complement to adjoining BF1 areas as range for wild ungulates.

Beatton map unit (10 940 ha)

The Beatton (BT) map unit is dominated by Orthic Gray Luvisols on loamy and clayey glaciolacustrine deposits near the Beatton and Alces rivers. The unit occupies less than 1% of the map area.

The map unit occurs on grayish brown, saline, weakly calcareous, silty loams and silty clays at elevations below 750 m. Topography is mainly gently to moderately sloping except in areas adjoining main rivers, where swarms of irregularly shaped mounds or "humpie" landforms are common.

The Beatton map unit occurs under the relatively mild agricultural climates of broad lowland valleys. The climate capability is rated as class 2 or 3, with growing degree-days ranging from 1030 to 1309. The May to September precipitation is about 250 mm. The native cover is mainly trembling aspen, white spruce, black cottonwood, and willows. Semiopen grass and shrub-covered areas occur on drier slopes and mounds.

Beatton soils (Plate II c) are well to moderately well drained, moderately to slowly pervious, and have a perhumid to humid water regime. Soils of the map unit may show wide variability in chemical characteristics. The presence of a hard, columnar, dark-stained, solonetzic B horizon (Bn or Bnt) places a soil in the solonetzic order. But frequently the B horizons fail to meet the requirements (Bntj), and the soils are classified as Solonetzic Gray Luvisols. Lime and gypsum salts usually occur at depths between 65 and 80 cm in the Csk horizon. Dark Gray or Black Solods with Ah horizons 7-15 cm thick and distinct Ae and AB horizons may be components of the map unit. Imperfectly drained or poorly drained soils (Buick) occur in depressional sites. Some map delineations contain more calcareous soils (Kathleen and Nampa). The profile description and analysis of a selected Beatton soil are in the Appendix. Beatton soils were described and mapped near Rose Prairie during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

BT Beatton (10 940 ha): Solonetzic soils and gleyed soils may occupy 40% or more of the area. Most areas of the BT map unit are rated as fairly good to fair in agricultural capability, with moderately severe limitations that restrict the range of crops. The map unit has severe to moderately severe limitations to the growth of white spruce and trembling aspen. Tree growth on these lands is limited by restrictions to rooting depth and combinations of soil moisture deficiency and excess. Excessive snow depth in some years is the main limitation for deer and moose.

Beryl map units (100 543 ha)

Beryl (BY) map units are dominated by Brunisolic Gray Luvisols on thin veneers of sandy and loamy alluvium that overlie clayey materials. They occur mainly west of the Kiskatinaw, Moberly, and Halfway rivers. The Beryl map units occupy 7.2% of the map area.

Beryl map units are on gently and moderately sloping landforms over elevations ranging from 700 to 800 m. The texture of the fluvial or shoreline veneer ranges from sand to silt and the thickness from 10 to 16 cm over moderately calcareous clayey materials.

Most Beryl map units are on outwash plains near the Peace River valley, within class 3 climate capability for agriculture. Growing degree-days in this class range from 1030 to 1169. The May to September precipitation is about 250 mm. The native vegetation consists of trembling aspen, lodgepole pine and mixed shrubs and forbs.

The Beryl soils are moderately well drained, slowly pervious, and have a humid water regime. The Beryl soil has a thin upper Ae horizon, a yellowish brown, loamy Bm horizon, and a second Ae horizon that overlies a more finely textured Bt horizon. The II C horizon is moderately calcareous. The profile description and analysis of a selected Beryl soil profile are given in the Appendix. Beryl soils were described and mapped in the Beryl Prairie area during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

BY-CD Beryl-Coldstream (6002 ha): This map unit, near the community of Groundbirch, is of minor occurrence. It usually contains 30-40% of poorly drained Gleysolic soil (Coldstream) developed on silty clay-textured materials.

BY-GO Beryl-Goose (3713 ha): The BY-GO map unit is confined to a few areas north of Hudson Hope. Beryl soils are associated with 30-50% peaty phase Gleysols (Goose) and Organics (Kenzie and Eaglesham) on nearly level and depressional land.

BY-LY Beryl-Lynx (22 008 ha): Most of this map unit contains 30-40% Lynx soils and as much as 20-30% of Kenzie and Eaglesham Organic soils in depressional sites. It is widely distributed both north and south of the Peace River.

BY-MO Beryl-Moberly (44 041 ha): Many areas of this fairly extensive map unit contain 40% or more of Moberly soils. Near the community of Groundbirch, much of the BY-MO unit is characterized by well-defined drumlin landforms. Kenzie and Eaglesham soils occupy about 20% of the unit.

BY-SU Beryl-Sundance (24 779 ha): A number of large areas of the BY-SU map unit occur on the plains near the main rivers. About 30-40% of the unit is composed of sandy-textured soils (Sundance); lesser amounts are poorly drained. Topography is undulating or may consist of mounded landforms.

With the exception of higher elevation lands associated with Moberly soils, the Beryl map units are rated as class 3 or 4 for agricultural capability. The predominant capability for production of white spruce and trembling aspen on the map units is class 3, that is, 5.0-6.3 m^3/ha per year. Land capability for sustaining moose and deer is moderately high with some capability as winter range in the Beryl units.

Boundary map unit (10 932 ha)

The Boundary (BD) map unit is dominated by soils that show a range in development through Luvisolic and Podzolic soil orders. The soils of the unit are derived from clayey morainal materials and weathered shales. They occupy areas in the watershed of the Alces River and cover less than 1% of the map area.

The BD-BU map unit occurs on mixed clay deposits and shale materials at elevations above 750 m. The dark gray clayey deposits are extremely acid, saline, very slowly permeable, and mostly stone-free. The long smooth slopes are gentle to moderate.

Soils of the map unit occur under a moderately cool climate in the Clear Hills upland. Although the growing period may range from 1030 to 1169 growing degree-days over most of the area, the climate capability drops to climatic class 5 at higher elevations. The May to September precipitation is about 250 mm. White spruce, lodgepole pine, and trembling aspen are dominant trees. Birches and willows form semiopen stands in some areas.

Boundary soils are moderately well drained, slowly pervious, and have a perhumid water regime. These soils form an undifferentiated complex of Podzolic and Luvisolic soils along a belt of acid shales and clays that stretches across the interprovincial boundary north of the Peace River. Some soil profiles have sufficient clay accumulations in the Bt horizons to be classified as Gray Luvisols. Amounts of accumulated Fe and Al range widely in subsoil horizons of analyzed profiles. In all cases, soil reactions throughout the solum are very low--between pH 3.8 and 4.8--and base saturation is low. The profile description and analysis of a selected Boundary soil are given in the Appendix. In many respects Boundary soils resemble Alcan soils but are generally more acidic and more heavily textured. Boundary soils were identified and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

BD-BU Boundary-Buick (10 932 ha): The map unit contains about 30% poorly drained Buick soils that are associated with peaty Gleysols and Gleyed Gray Luvisols on level and depressional land. The map unit has severe limitations for growing a wide range of agricultural crops. Only a small part of the unit is cultivated. Limitations include very fine texture, high acidity and low exchange capacity, slow internal drainage, frost hazard, and high clearing costs. White spruce yields 5.0-6.3 cu m^3/ha per year (class 3) on Boundary soils but may produce only 2.2-3.5 m^3 on the more poorly drained Buick soils. Excessive snow depth is the main limitation to the capability of the map unit to sustain deer and moose.

Branham map units (6957 ha)

Branham (BR) map units are confined to that part of the Peace River valley extending from the Peace Canyon Dam downstream to near the confluence of Cache Creek and the Peace River. The dominant soils are Orthic Eutric Brunisols on sandy and silty colluvial fan and terrace materials. The map unit occupies less than 1% of the map area.

The BR and BR-CY map units occur on nearly level to gently sloping intermediate terraces in the upper valley of the Peace River at elevations below 600 m. The silty and sandy deposits are calcareous.

A recent detailed climate study (Cheesman and Davis 1982) indicates a class 2GF climatic capability for agriculture near Hudson Hope and a class 3A (improving to class 1) for the main Peace River valley. Near Hudson Hope the climate capability is decreased by the presence of cooler air from the nearby foothills. The May to September precipitation is about 225 mm. Trembling aspen and lodgepole pine are the common trees; shrubs and forbs such as common saskatoon (Amelanchier alnifolia var. alnifolia), kinnikinnick (Arctostaphylos uva-ursi), and arctic lupine (Lupinus arcticus subsp. arcticus) form the understory.

Branham soils are well drained and rapidly pervious, and have a subhumid water regime. The Branham soil has a yellowish brown sandy loam Bm horizon that directly overlies the gray, calcareous sandy or loamy parent material. The profile description and analysis of a selected Branham profile are given in the Appendix. Branham soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

BR Branham (3067 ha): The BR map unit contains variable amounts (20-40%) of Regosolic soils that have weakly developed, silty, and sandy-textured Ah horizons. The soils in this unit have slight limitations that restrict the range of agricultural crops.

BR-CY Branham-Clayhurst (3890 ha): In most areas the BR-CY map unit contains about 40% gravelly Clayhurst soils. Agricultural capability for this map unit depends primarily on the distribution of Clayhurst soils and the thickness of the mantle of fine-textured material overlying gravel. Limitations are stoniness, low moisture-holding capacity, and adverse topography.

Both map units are rated as forest capability class 4 or 5 (4.9-9.2 m^3/ha per year) for lodgepole pine, with soil moisture deficiency as the main limitation. The BR and BR-CY map units have a high capability as food plants and prime winter range for moose and deer.

Buick map unit (8487 ha)

The Buick (BU) map unit is dominated by Orthic Luvic Gleysols on clayey deposits and weathered shales that occur on uplands east of the Beatton River. The unit occupies less than 1% of the map area.

The morainal landform is composed mainly of a clayey-textured till blanket at elevations near 750 m. The grayish brown clayey and loamy deposits are weakly calcareous, slightly saline, and slightly stony. The landform consists of nearly level to very gentle slopes adjoining drainage systems.

The unit occurs under a moderately cool climate that is rated as agricultural climate class 3. The May to September precipitation is about 250 mm. White spruce, willows, and birch are the dominant trees.

Buick soils (Plate II a) are poorly drained, slowly pervious, and have an aquic water regime. They occur with gleyed Podzolic soils along a belt of acid shales and clays that stretches across the interprovincial boundary north of the Peace River. In other parts of the map area Buick soils are associated with Alcan map units. Soil reactions throughout the sola are low--between pH 3.8 and 4.8--as is base saturation. The profile description and analysis of a selected Buick soil are given in the Appendix. Buick soils, which were first described in the original soil survey of the Peace River region in British Columbia (Farstad et al. 1965), resemble Snipe soils in many respects, but they are generally more acidic and more heavily textured.

BU Buick (8487 ha): The map unit, dominated by Buick soils, is in the Alces Creek drainage. It contains 20-30% poorly drained Organic soils, peaty Gleysols, and gleyed soils on level and depressional land.

The BU map unit has severe limitations for growing a wide range of agricultural crops. Limitations include very fine texture, high acidity, low exchange capacity, slow internal drainage, frost hazard, and high clearing costs. White spruce yields only 2.2-3.5 m^3/ha per year (productivity class 5)on Buick soils. Excessive snow depth in some years is the main limitation to the capability of the map unit to sustain deer and moose.

Centurion map unit (12 547 ha)

The Centurion (CE) map unit is dominated by carbonated Rego Humic Gleysols on silty, glaciofluvial deposits on outwash plains that adjoin the valley of the Peace River near the community of Farrell Creek. The map unit occupies 1% of the map area.

The variable, sandy and silty sediments that constitute the parent materials of the soils of the unit are calcareous and bedded. They occur on nearly level to very gently sloping landforms below elevations of 700 m.

The Centurion map unit occurs under a class 3 agricultural climate associated with areas of frost pockets. The May to September precipitation is about 250 mm. Vegetation is dominated by willows, groundbirch, and Labrador tea.

Centurion soils are poorly drained, slowly pervious, and have an aquic water regime. The typical profile has thick L-F and Ahk horizons that are moderately calcareous and overlie gleyed silty-textured C horizons. A Centurion soil is described in the Appendix.

CE Centurion (12 547 ha): Organic Eaglesham and Kenzie soils constitute 20-40% of the map unit, and Lynx and Sundance soils occupy 20-30% of the larger map unit delineations.

The Centurion map unit has moderately severe to severe limitations for growing a wide range of crops. Excess water resulting from poor soil drainage and high water tables is the main limitation both for agricultural crops and commercial forest. Capability of the map unit for sustaining moose and deer is moderately high. About 30% of the unit is considered to be important winter range for moose.

Clayhurst map unit (4772 ha)

The Clayhurst (CY) map unit is dominated by Eluviated Eutric Brunisols on gravelly sandy glaciofluvial deposits. This map unit occupies high elevation terraces in the valleys of the Peace and Doig rivers, where it constitutes less than 1% of the map area.

The unit occurs on gravelly sandy loam and loamy sand at elevations below 600 m. The gravelly stony materials are weakly calcareous and permeable. Topography is gently to moderately sloping.

Clayhurst soils occur under the mild climate of the main river valleys. The freeze-free period is 90 days or longer in the Peace River valley and 75-89 days along the Doig River. Growing degree-days exceed 1200, and the May to September precipitation is about 225 mm.

White spruce, lodgepole pine, and trembling aspen are the dominant trees. Willows and other shrubs form semiopen stands in some areas.

Clayhurst soils are well drained to rapidly drained, rapidly pervious, and have a subhumid soil water regime. The soils generally do not have sufficient clay accumulation in the B horizons to be classified as Gray Luvisols. Soil reaction throughout the profile is slightly acid to neutral; lime carbonate coats the gravels and cobbles at depths of about 50 cm. Clayhurst soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

Clayhurst soils are more gravelly and generally lack the Luvisolic development of Sundance soils. Clayhurst soils are significant components of some Branham, Moberly, and Pingel map units.

CY Clayhurst (4772 ha): The Clayhurst map unit is quite pure, but some delineations may contain Codner soils in depressions.

The CY map unit has severe limitations for growing a wide range of agricultural crops. Only small areas of the unit are cultivated. Limitations include low moisture-holding capacity, stoniness, and some adverse topography. Lodgepole pine has low capability on Clayhurst soils, with yields of 0.8-3.5 m^3/ha per year (productivity class 5 or 6) being common. Areas of the CY map unit provide good winter range for deer and moose.

Codesa map units (26 463 ha)

Codesa (CO) map units are dominated by Orthic Gray Luvisols on veneers of sand and loamy alluvium that overlie clayey materials. They have wide occurrence throughout the eastern part where they occupy 1.9% of the map area.

The Codesa map units occupy gentle to moderate slopes. Although the texture of the fluvial capping or shoreline veneer ranges from sand to silt, the thickness is a fairly constant 30-60 cm over the underlying more finely textured material. The deposits occur over elevations that range from 650 to 750 m above sea level.

Codesa map units are within the limits of climate capability class 3, that is, 60-74 freeze-free days and 1030-1169 growing degree-days. The May to September precipitation is 250 mm or less. The native vegetation consists of trembling aspen, lodgepole pine, and mixed shrubs and forbs.

Codesa soils are moderately well drained, slowly pervious, and have a humid soil water regime. These soils have thin Ah horizons and relatively thick Bt horizons developed in the loamy veneer material. A thin pebble line or gravel lens is common at the contact with the more heavily textured II C horizon. The profile description and analysis of a selected Codesa profile are given in the Appendix. Donnelly soils, also classified as Orthic Gray Luvisols, have many of the properties of Codesa soils. Codesa soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950).

CO-DO Codesa-Donnelly (21 274 ha): Donnelly soils occupy from 30% to as much as 60% of the CO-DO map unit. Alcan soils, developed on till, are minor inclusions. Areas of this map unit occur near Fort St. John and south of Taylor across the Peace River.

CO-SN Codesa-Snipe (5189 ha): The CO-SN unit has 30-40% poorly drained Snipe soils and minor amounts of Organic soils. Distribution of the unit is confined to the valley of the Alces River.

Agricultural capabilities of the two map units are mainly class 3 or 4 depending on elevation and minor soil limitations. Most areas of the two Codesa units have moderately severe limitations related to soil water for the production of white spruce and lodgepole pine. Snow depth is the main limiting factor for moose and deer.

Codner map unit (6120 ha)

The Codner (CN) map unit is dominated by Orthic Humic Gleysols on silty- and fine sandy-textured glaciofluvial materials. The unit occurs as relatively small scattered areas in the southern part, where it occupies less than 1% of the map area.

The Codner unit occurs on sandy and silty sediments that are strongly calcareous, variable in thickness, stratified, and often cross-bedded. The elevation is generally less than 900 m.

Areas of the Codner map unit are in class 3 or 5 climate capability for agriculture areas, which are frequently subject to late frosts. The May to September precipitation is about 250 mm. Groundbirch, willows, sedges, and reeds form characteristic plant communities on Codner soils.

Codner soils are imperfectly and poorly drained, moderately pervious, and have an aquic water regime. Commonly the soils have a peaty surface, a thick Ah horizon, a strongly mottled Bg horizon, and a calcareous C horizon. Codner soils were first named and described in the Peace River area of Alberta (Odynsky et al. 1952).

CN Codner (6120 ha): In the Alberta Plateau benchlands, areas of the map unit occupy some of the tributary stream valleys. Here Codner soils are associated with peaty Gleysols, Organics, and better drained soils that constitute 30-40% of the map unit. Limitations of climate and wetness restrict agriculture mainly to the production of forage crops. The growth of commercial trees is severely limited by wetness. Most Codner areas provide good winter range for moose and an abundance of food plants during the year.

Davis map units (22 395 ha)

Davis (DV) map units are dominated by Orthic Gray Luvisols on loamy glaciofluvial materials. They occur mainly on the plains adjoining the valley of the Peace River and occupy 1.6% of the map area.

The variable, sandy, and silty sediments from which the Davis soils formed are strongly calcareous, variable in thickness, stratified, and often cross-bedded. They occur on gently to strongly rolling and hummocky areas, below elevations of 700 m.

Most Davis map units occur under the relatively mild agriculture climate class 2, associated with the Peace River valley. The remaining areas are in class 3 climate. The May to September precipitation is less than 250 mm. The native cover is mainly trembling aspen, white spruce, black cottonwood, and willows.

Davis soils are well to moderately well drained, moderately pervious, and have a humid water regime. The most common soil of the map units is an Orthic Gray Luvisol with a fairly thick, sandy Ae horizon and a silty clay-textured Bt horizon overlying a calcareous Ck horizon at 50-60 cm below the surface. The description and analysis of a selected Davis soil profile are given in the Appendix. Davis soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950).

DV-CD Davis-Coldstream (12 024 ha): The DV-CD map unit contains 30-50% Gleysolic soils (Coldstream) and Organic soils (Eaglesham). The main occurrence is in the valley of the lower Moberly River.

DV-SU Davis-Sundance (10 371 ha): The landform associated with this map unit is characterized by large, irregularly shaped mounds of sandy-textured Eutric Brunisols and Gray Luvisols (Sundance) with scattered inclusions of wetlands that together may occupy 40-60% of the unit.

The Davis map units are rated as fair to fairly good agricultural lands. The presence of strongly ridged and mounded landforms and poorly drained depressions severely reduces the capability of some areas. Growth of white spruce and trembling aspen on these lands is limited to classes 4 and 5 forest capability by restrictions to rooting depth and combinations of soil moisture deficiency and excess water. Excessive snow depth in some years is the main limitation to the capability of the map unit to sustain deer and moose.

Demmitt map unit (3533 ha)

The Demmitt (DM) map unit is dominated by Orthic Gray Luvisols on loamy and clayey till deposits near Pouce Coupe. The Demmitt map unit occupies less than 1% of the map area.

The map unit occurs on loamy and clayey, weakly calcareous till that is often gravelly. Topography is moderately to very strongly sloping over elevations ranging from 730 to 900 m.

Climatic capability for agriculture is class 3G. The May to September precipitation exceeds 250 mm in most areas. Trembling aspen, white spruce, and lodgepole pine are common trees, with a willow and alder shrub understory.

Demmitt soils are moderately well drained, slowly pervious, and have a perhumid water regime. The dominant soils are Orthic Gray Luvisols with thick Ae and clayey Bt horizons that overlie clay loam till, with lime concentrated at depths of 90 cm or more. The description and analysis of a selected Demmitt soil profile are given in the Appendix. Demmitt soils were first named and described west of Beaverlodge, Alta. (Odynsky et al. 1961).

DM-CO Demmitt-Codesa (3533 ha): Codesa soils occupy 30% or more of the DM-CO map unit on moderate to steep slopes. Agricultural capability ratings are class 4 or 5. Forest capabilities are about 3.6-4.9 m^3/ha per year (class 4) for white spruce.

Devereau map units (39 031 ha)

Devereau (DU) map units are dominated by Dark Gray Luvisols on loamy and clayey deposits in the glaciolacustrine areas associated with the valley of the Kiskatinaw River. The map units occupy 2.8% of the map area.

The Devereau map units occur on moderately and strongly calcareous, moderately saline, silty, and clayey glaciolacustrine materials at elevations below 800 m. Topography is mainly gently to moderately sloping except in areas adjoining the main rivers, where large mounds or "humpie" landforms are common.

The agricultural climate of the valley of the Kiskatinaw River has a rating of class 3G. The May to September precipitation is about 250 mm. The native vegetation is mainly a semiopen cover of trembling aspen with white spruce, lodgepole pine, and willows. Grass- and shrub-covered areas occur on drier southerly aspects of slopes and mounded landforms.

Devereau soils are well drained, moderately pervious, and have a subhumid water regime. The most common soil of the map unit is a Dark Gray Luvisol with a fairly thick loamy Ahe horizon and a friable, silty clay Bt horizon overlying a calcareous Ck horizon at about 60 cm. The profile description and analysis of a selected Devereau soil profile are given in the Appendix. Dark Gray Solods with Solonetzic Bn or Bnt horizons are common components of the map units. Devereau soils were described and mapped in the Peace River region of British Columbia (Farstad et al. 1965).

In most areas where Devereau soils predominate, other soils are often of significant occurrence. Two of these soils are described in Report No. 8 of the British Columbia soil survey (Farstad et al. 1965). Descriptions and analyses of these soils--Coldstream, a Luvic Gleysol, and Sukunka, an Orthic Gray Luvisol--are given in the Appendix of the present report.

DU Devereau (11 516 ha): Solonetzic Gray Luvisols and other salt-influenced soils generally occupy 30-50% of this map unit. Limitations of adverse topography and soil factors such as poor structure and low permeability place the DU map unit in agriculture capability class 3 or 4. Forest capability for white spruce and trembling aspen is limited to class 4, i.e., 3.6-4.9 m^3/ha per year, mainly through adverse soil factors.

DU-CD Devereau-Coldstreamn (13 351 ha): The DU-CD map unit contains 30-50% Gleysols (Coldstream and Goose) and may have significant amounts of Gray Luvisols (Sloane). Land capabilities for agriculture and forestry are similar to or slightly lower than the ratings given for the DU map unit.

DU-HA Devereau-Hanshaw (9891 ha): Areas of the DU-HA map unit are confined to the higher elevations of tributary stream valleys in the vicinity of Fellers Heights. Hanshaw soils, which occupy about 40% of the map unit, are Solonetzic Gray Luvisols and Orthic Gray Luvisols on loamy and clayey till.

Climate and soil factors combine to limit agricultural capability of the unit to class 4 at best.

DU-KZ Devereau-Kenzie (4273 ha): This map unit occurs on irregular eroded lands in the upper valley of the Kiskatinaw River. Organic soils (Kenzie and Eaglesham) occupy 40-60% of the unit. Agriculture is confined to forage production and grazing.

Capability of Devereau lands for the production of wild ungulates is moderately high, with some limitation caused by excessive snow depth. Devereau units provide good winter range for moose.

Donnelly map units (33 790 ha)

Donnelly (DO) map units are dominated by Solonetzic Gray Luvisols on loamy to clayey lacustrotill. Their most important occurrences are in the basin areas of Cecil Lake, Fort St. John, and Dawson Creek. The map units occupy 2.4% of the map area.

The Donnelly map units occur on a variable mixture of materials (lacustrotill) transported by ice and deposited in glacial lakes. These dark-colored, loamy, and clayey deposits are weakly calcareous, slightly saline, and usually contain pebbles and weak stratifications. Lacustrotill materials mantle the gentle lower slopes at elevations ranging from 650 to 750 m.

The map units lie almost entirely within class 3 climate capability for agriculture, that is, 60-74 freeze-free days and 1030-1169 growing degree-days. The May to September precipitation is about 250 mm. Little of the former native plant communities of white spruce, trembling aspen, lodgepole pine, willows, and grasses remains today.

Donnelly soils (Plate Ib) are moderately well drained, slowly pervious, and have a humid water regime. Commonly, the soils have thick, platy Ae horizons and strongly developed Btnj horizons over calcareous and saline lower horizons. The profile description and analysis of a selected Donnelly soil profile are given in the Appendix. Donnelly soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950). A Gleyed Solonetzic Gray Luvisol, mapped as the La Prise soil by Lord and Green (1973) is a common associate of the DO-SN map unit. A typical soil profile is described in the Appendix of the present report.

DO Donnelly (14 672 ha): Most areas of the DO map unit contain 30-40% of Dark Gray Solod (Esher). Some areas contain 30% or less of shoreline materials. Under hummocky landform patterns there may be minor inclusions of lacustrine soils.

DO-SN Donnelly-Snipe (19 118 ha): Snipe soils and peaty Gleysols occupy 30-40% of the DO-SN map unit. Slopes are gently undulating.

In the map area, the DO-SN map units have moderate cumulative limitations that restrict the range of agricultural crops. The growth of commercial trees, such as lodgepole pine and white spruce, is limited by soil rooting restrictions and excess moisture to classes 4 and 5 (2.2-4.9 m^3/ha per year). Capability of these lands for sustaining deer and moose is moderately high but may be reduced in some years by excessive snow depth.

Eaglesham map units (19 642 ha)

Eaglesham (EG) map units consist mainly of fens that are dominantly Terric Mesisols on sedge peats. They occur throughout the area in association with many other map units. The Eaglesham map units occupy 1.4% of the map area.

Fens are in low-lying depressional or level areas and consist of decomposed peaty materials derived mainly from sedges in a eutrophic environment. The peat is saturated with water and occurs generally as a blanket fen 1-2 m thick over mineral materials. The organic materials are associated mainly with fluvial and lacustrine sediments at elevations that range from 600 to 700 m.

Although Eaglesham map units occur under most classes of regional climate, local frost pooling is characteristic of peatlands in depressions and lower landscape positions. Sedges dominate the vegetative cover, with some grasses, forbs, and shrubs. Trees are generally absent or widely spaced.

Eaglesham soils are very poorly drained, slowly pervious, and have an aqueous water regime. The Eaglesham map units are dominated by moderately decomposed, acidic sedge fen peaty materials that tend to become less acid and more decomposed with depth. The map units contain variable amounts of peaty Gleysols, Typic Mesisols, and Fibrisols. Eaglesham soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950). A typical profile is described in the Appendix.

EG Eaglesham (14 063 ha): Organic soils, mainly Terric Mesisols, occupy more than 50% of the map unit. Variable amounts of deeper Organic soils and Gleysols make up the balance.

EG-SN Eaglesham-Snipe (5579 ha): This map unit contains 30-50% Snipe soils and peaty phases of this and other Gleysols.

Under favorable climates where drainage is feasible, some areas of Eaglesham map units sustain forage crops and pasture. Organic soils are unsuited for growth of commercial trees but they can provide satisfactory forage and good wintering conditions for moose.

Esher map units (44 461 ha)

Esher (ES) map units are dominated by Dark Gray Solods on loamy to clayey lacustrotill. Their most important occurrences are in areas near Fort St. John and in the basin area of Dawson Creek. The Esher map units occupy 3.2% of the map area.

The Esher map units occur on a variable mixture of materials (lacustrotill) transported by ice and deposited in glacial lakes. These dark-colored, loamy, and clayey deposits are weakly calcareous, slightly saline, and usually contain pebbles and weak stratification. Lacustrotill materials mantle the gentle lower slopes at elevations ranging from 650 to 750 m. Shoreline and beach deposits are frequently included in Esher map units.

The map units lie entirely within class 3 climate capability for agriculture, that is, 60-74 freeze-free days and 1030-1169 growing degree-days. The May to September precipitation is about 250 mm. Little of the former native plant communities of trembling aspen, lodgepole pine, willows, and grasses remains today.

Esher soils are moderately well drained, moderately to slowly pervious, and have a humid water regime. Commonly, the soils have thick, dark-colored Ah horizons, platy Ae horizons, and a strongly developed Bnt horizon over calcareous and saline lower horizons. The profile description and analysis of a selected Esher soil profile are given in the Appendix. Where soils occur under vegetation that is dominated by grasses and herbaceous perennials, soil development is often variable and complex on the calcareous and saline lacustrotill parent material. Here, Eluviated Black soils and Black Solods are common associates of Esher soils. Peoria, an Eluviated Black soil, is described in the Appendix. Under semiopen tree cover, Solonetzic Gray Luvisols (Donnelly soils) occur frequently. Esher soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950).

ES Esher (28 866 ha): Donnelly soils may make up about 40% of this map unit in some landscape positions. On drier open slope aspects, Eluviated Black soils and Black Solods may predominate in the unit.

ES-PE Esher-Peoria (15 595 ha): Many areas of the ES-PE map unit adjacent to main urban centers in the Peace River district have been converted from prime farmland to urban and industrial uses. The Eluviated Black or Black Solod soils (Peoria), which are the major associates in the ES-PE map unit, are developed on silty and fine sandy loam veneers 15-75 cm thick overlying clay. Amounts of Peoria soils range from 30 to more than 50% in some areas. Gravelly lenses and layers occur in some soil profiles.

In the map area, the ES and ES-PE map units have moderate limitations that restrict the agricultural capability to class 3. The growth of commercial trees, such as lodgepole pine and white spruce, is limited by soil rooting restrictions and soil moisture deficiency to classes 4 and 5 (2.2-4.9 m^3/ha per year). Capability of these lands for sustaining deer and moose is moderately high but may be reduced in some years by excessive snow depth.

Falher map units (33 326 ha)

Falher (FA) map units are dominated by Dark Gray Solods on clayey glaciolacustrine materials. They occur mainly in the lowland areas near Fort St. John, Dawson Creek, and Rolla. The Falher map units occupy 2.4% of the map area.

The main landforms are the extensive basins of former glacial lakes. Elevations of these nearly level lands, which include some irregular mounded topography, are mainly less than 700 m. The glaciolacustrine sediments are relatively thick, dark gray clayey materials that are weakly calcareous and saline, stone-free, and varved.

The Falher map units lie entirely within class 2 climate capability for agriculture, that is, 75-89 freeze-free days and 1170-1309 growing degree-days. The May to September precipitation is about 250 mm. Little of the former native plant communities of willows, shrubs, and coarse grasses with areas of white spruce and trembling aspen remains today.

Falher soils are moderately well drained, slowly pervious, and have a humid water regime. Commonly, the soils have thick Ahe horizons and strongly developed Bnt horizons over calcareous and saline lower horizons. The profile description and analysis of a selected Falher soil profile are given in the Appendix. An imperfectly drained Gray Solod (Nampa) is also described in the Appendix. Falher soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950).

FA Falher (7085 ha): Most areas of FA map units contain 40-60% Chernozemic soils and Solonetzic Black soils, described in earlier soil survey reports under Rycroft series (Odynsky and Newton 1950).

FA-JU Falher-Judah (13 528 ha): This map unit occupies large complex soil landscapes near Shearerdale, Clayhurst, and Fort St. John. Typically, the topography is moderately and strongly rolling, ridged and hummocky, with 30-50% Judah soils on better drained sites. Lesser amounts of the more poorly drained Nampa soils occupy level and depressional sites.

FA-NP Falher-Nampa (12 713 ha): About 40% of the FA-NP map unit is occupied by Nampa soils, with lesser inclusions of Gleysols (Goose) and Organic soils (Eaglesham).

In the map area, limitations of climate and topography restrict the range of cultivated crops to agricultural capability classes 2 and 3. The growth of commercial white spruce is limited by soil rooting restriction and excess moisture to class 4 (3.6-4.9 m^3/ha per year). Capability of these lands for sustaining deer and moose is moderately high but may be reduced in some years by excessive snow depth.

Fellers map units (59 075 ha)

Fellers (FE) map units are dominated by Brunisolic Gray Luvisols on loamy and clayey morainal deposits. They occur in the southern benchlands that surround the community of Fellers Heights and lie south of Dawson Creek. The Fellers map units occupy 4.2% of the map area.

The map units occur on loamy and clayey, weakly calcareous till that is often gravelly. Topography is moderately to very strongly sloping over elevations that generally exceed 900 m. The main source for the parent materials of Fellers soils is considered to be morainal materials transported by the cordilleran ice sheet which advanced eastward to the watershed of the Kiskatinaw River. In the vicinity of Fellers Heights these cordilleran materials are closely associated with terminal deposits of the Laurentide (continental) ice sheet (Fig. 4).

Practically all map units dominated by Fellers soils are in agricultural climate capability class 5 in a freeze-free period of 30-40 days and 780-1029 growing degree-days. The May to September precipitation exceeds 250 mm. Trembling aspen, white spruce, lodgepole pine, willows, and alder are common trees.

Fellers soils are well drained, moderately to slowly pervious, and have a perhumid water regime. These Brunisolic Gray Luvisols have thick Ae, Bm, or Bf horizons and thick, strongly structured, clayey Bt horizons. Lime occurs with sandstone fragments at a depth of 100 cm. The profile description and analysis of a selected Fellers soil profile are given in the Appendix. Fellers soils, described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965) were later identified and mapped as the Fellers soil association by Vold et al. (1977) on high-elevation (1100 m) benchlands, south of the map area. West of Swan Lake on the Dawson Creek map sheet, a limited area of the FE-KS map unit occurs. This map unit of the benchlands contains 40-60% loamy to clayey, weakly calcareous and saline materials. The Kiskatinaw soils that are developed on these lacustrotill deposits are similar to Hazelmere soils but are Brunisolic Gray Luvisols.

FE1 Fellers 1 (12 143 ha): Areas of the FE1 map unit are on nearly level and gently rolling benchlands south of Bear Mountain and surrounding the community of Fellers Heights. Till materials less than 1 m thick cover the bedrock. As much as 30-50% of the soils may contain orthic and gleyed subgroups or lithic phases of Gray Luvisols.

FE2 Fellers 2 (19 233 ha): Soils of this unit are developed on a thin veneer of till overlying sandstone bedrock. Lithic phases of Brunisolic Gray Luvisols predominate. The unit is extensive on the tablelands west of Fellers Heights.

FE-KS Fellers-Kiskatinaw (2483 ha): This map unit is confined to elevations near 900 m in the high benchlands west of Swan Lake. The unit contains 40-60% Kiskatinaw soils on high-elevation deposits of lacustrotill.

FE-MO Fellers-Moberly (3706 ha): This map unit occupies slopes of some tributary stream valleys of the Coldstream Creek drainage system. About 40% of the more calcareous Moberly soils occur with Fellers soils.

FE-SN Fellers-Snipe (21 510 ha): Large areas of this unit occupy landscape positions similar to those of the FE 2 map unit, but gleyed soils, Gleysols (Snipe), and Organic soils are significant inclusions.

Climatic limitations restrict agricultural capability of the Fellers map units to class 5, i.e. production of forage crops or hay. Forestry capability is generally rated as class 4 or 5 for production of lodgepole pine and white spruce. Lands included in the Fellers units have slight limitations (mainly excessive snow depth) for wintering of moose populations.

Goose map unit (33 983 ha)

The Goose (GO) map unit is dominated by Orthic Humic Gleysols on clayey lacustrotill and glaciolacustrine materials. It occurs mainly in the tributary valleys of Cache Creek and in the Beatton, Kiskatinaw, and Pouce Coupe river valleys. The Goose map unit occupies 2.4% of the map area.

The map unit occurs on glaciolacustrine deposits and on variable mixtures of materials (lacustrotill) transported by ice and deposited in glacial lakes. These deposits are relatively thick, dark gray clayey materials that are weakly calcareous and saline; they usually contain pebbles and weak stratifications. Lacustrotill materials mantle the gentle lower slopes at elevations ranging up to 750 m.

Although most areas of the Goose map unit fall within the broad class 3 climate capability for agriculture, many areas are subject to cold-air pooling and late spring frosts. The May to September precipitation is 250 mm or more. Groundbirch, willows, sedges, and reeds form characteristic plant communities on Goose soils.

Goose soils (Plate If) are poorly drained, slowly pervious, and have an aquic soil water regime. Commonly the soil has a peaty surface, a thick Ah horizon, and a strongly mottled Bg horizon. The profile description and analysis of a selected Goose soil profile are given in the Appendix. A peaty phase Gleysol (Prestville) is also described in the Appendix. Goose soils were first named and described in the Peace River area of Alberta (Odynsky et al. 1952).

GO Goose (33 983 ha): Most areas of the GO map unit contain 30% or more of Organic soils (Eaglesham and Kenzie) and other Gleysols (Codner). Gleyed Gray Luvisols constitute a significant part in some areas. The profile description and analysis of a selected Gleyed Gray Luvisol (La Prise) profile are given in the Appendix.

The Goose map unit is capable of producing good yields of forage crops, legumes and grasses, particularly after drainage has been improved. The growth of commercial trees such as lodgepole pine and white spruce is severely limited by wetness. Most areas of the Goose unit provide good winter range for moose and an abundance of food plants during the year.

Hambrook map unit (6992 ha)

The Hambrook (HB) map unit is dominated by Brunisolic Gray Luvisols on loamy cordilleran till. This unit is confined to the foothills in the extreme southwestern part, where it occupies less than 1% of the map area.

The loamy till parent material of the Hambrook soil is calcareous below 50 cm in depth and overlies sandstone and shale bedrock. Shallow till veneers are common components of the unit. The Hambrook map unit is found over elevations ranging from 1050 to 1500 m, on moderately to strongly sloping topography.

Climatic class 6, with less than 30 days freeze-free period and 670-779 growing degree-days, prevails throughout the high-elevation benchlands and foothills. The May to September precipitation exceeds 250 mm. Vegetation is characteristic of the forested subzone of the subalpine zone.

Hambrook soils are well drained, moderately to slowly pervious, and have a perhumid water regime. They differ from Moberly soils, described in the Appendix, on the basis of vegetation zone (Vold et al. 1977). Eluviated Eutric Brunisols (Robb) are common associates, particularly where somewhat more coarsely textured tills occur. Hambrook soils were first named and described as a soil association in a study of the northeast coal fields (Vold et al. 1977).

HB-RB Hambrook-Robb (6992 ha): This map unit is in the Rocky Mountain Foothills southwest of Chetwynd. Significant amounts (30-60%) of the unit are made up of Eluviated Eutric Brunisols (Robb) and soils developed on colluvium (Horseshoe). Topography is strongly to steeply sloping.

Because of the adverse subalpine climate, Hambrook map units have no potential for agriculture, other than grazing of native plants. Land capability for forestry is rated class 4 or 5 for lodgepole pine, with some class 3 for Engelmann spruce. Limitations to tree growth include restriction to the rooting zone by bedrock, soil moisture deficiency, and cold temperatures. Capability for sustaining moose and caribou is only moderate, with excessive snow depth as a major limitation.

Hanshaw map units (20 990 ha)

Hanshaw (HA) map units are dominated by Solonetzic Gray Luvisols on loamy and clayey till deposits. They occur on the lower slopes of the till plain near Fellers Heights. The Hanshaw map units occupy 1.5% of the map area.

The map units occur on loamy and clayey, weakly calcareous till that is often gravelly and somewhat saline. Topography is moderately to strongly sloping. Most areas are between 700 and 900 m elevation. In the vicinity of Fellers Heights the surficial deposits of the cordilleran ice sheet are closely associated with the terminal deposits of the Laurentide (continental) ice sheet, which originated to the east (Fig. 4).

Most of the Hanshaw areas are in borderline zones between agricultural climate capability classes 3 and 5. The May to September precipitation exceeds 250 mm. Trembling aspen, white spruce, lodgepole pine, willows, and alders are common trees.

Hanshaw soils are moderately well drained to imperfectly drained, slowly pervious, and have a perhumid water regime. Soils developed on till materials of the benchlands in the watershed of the Kiskatinaw River appear to be related to Edson soils mapped south of Fellers Heights and to the southeast in Alberta (Twardy and Corns 1980).

A typical profile of a Solonetzic Gray Luvisol has Ae and BA horizons and a dark-colored, hard, columnar-structured Bnj horizon. These soils were mapped and described in the first soil survey of the Peace River region of British Columbia (Farstad et al. 1965).

HA Hanshaw (4395 ha): Although Hanshaw soils dominate in most areas of this unit of steep valley slopes near Fellers Heights, Fellers soils may occupy 50% or more in some areas. Adverse topography and a short growing season severely limit the choice of agricultural crops. Forest capability is moderate to poor.

HA-CN Hanshaw-Codner (4415 ha): The HA-CN map unit is limited to a few high-elevation areas of tributary stream valleys west of the Kiskatinaw River. The short growing season limits agriculture to forage crops and pasture. Forest capability is moderate to poor. Codner soils occupy 30-40% of the more poorly drained sites.

HA-SN Hanshaw-Snipe (12 180 ha): This map unit occurs on gently to moderately sloping lands, where poorly drained areas of Snipe soils make up about 30% of the unit. The unit is restricted by climate limitations to the growth of forage crops and pasture. Forest capability is moderate to poor. Suitability for moose is moderately high, and the map unit provides some winter range for these ungulates.

Hazelmere map units (16 328 ha)

Hazelmere (HZ) map units are dominated by Solonetzic Gray Luvisols on loamy and clayey lacustrotill materials. They occur along the Alberta border area from Pouce Coupe to Tupper where they occupy 1.2% of the map area.

The Hazelmere map units occur on a variable mixture of materials (lacustrotill) transported by ice and deposited in glacial lakes. These deposits consist of grayish brown loamy and clayey strata that alternate with lighter-colored layers of sandy loam and loam. The materials are weakly calcareous and saline, and often gravelly and stony. The material is more variable in composition and occurs at somewhat higher elevations (greater than 750 m) than the closely related parent material of Donnelly soils.

The map units lie within class 3 climate capability for agriculture, that is, 60-74 freeze-free days and 1030-1169 growing degree-days. The May to September precipitation is about 250 mm. Little of the former native plant communities of white spruce, trembling aspen, lodgepole pine, willows, and grasses remains today.

Hazelmere soils are imperfectly drained, slowly pervious, and have a humid to perhumid water regime. Commonly, the soil has a thick platy Ae horizon and a strongly developed Btnj horizon over calcareous and saline lower horizons. The profile description and analysis of a selected Hazelmere soil profile are given in the Appendix. A Dark Gray Solod (Albright) is also described. Hazelmere and Albright soils were first named and described in the Peace River area of Alberta (Odynsky et al. 1961).

HZ-AB Hazelmere-Albright (3916 ha): The HZ-AB map unit contains 40% or more of Dark Gray Solods (Albright) and Black Solods that have developed at lower elevations on semiopen slopes with southerly exposures. Agricultural capability over most of the unit is rated as class 3 or 4, the main limitation being climate with minor soil limitations. Growth of commercial trees is restricted by soil moisture availability. Capability for supporting moose and deer is moderately high.

HZ-DM Hazelmere-Demmitt (4798 ha): Hazelmere soils occur in this unit with 40% or more Demmitt soils, often with inclusions of shoreline gravels (Clouston). Adverse topography is the main factor limiting agriculture to classes 4 and 5. Forest capability for white spruce and lodgepole pine is rated as class 4 or 5 on moisture availability and soil restrictions. Capability for supporting moose and deer is moderately high.

HZ-SN Hazelmere-Snipe (7614 ha): The HZ-SN map unit occurs principally as one large area at a relatively high elevation west of the Pouce Coupe valley. Poorly drained soils such as Snipe and Kenzie occupy about 30% of the unit, with some inclusion of Fellers and Demmitt soils. A number of factors restrict agricultural capability mainly to the growing of forage crops or pasture. White spruce is capable of producing from 3.6 to 6.3 m^3/ha per year (classes 3 and 4) on the better drained soils of the unit. Capability for supporting moose and deer is moderately high.

Horseshoe map unit (13 128 ha)

The Horseshoe (HS) map unit is dominated by Dystric Brunisols on gravelly sandy and loamy colluvium, which overlies sandstone and shale bedrock. The principal occurrence is on the slopes of Tuskoola Mountain in the subalpine zone of the Rocky Mountain Foothills, where it occupies 1% of the map area.

Gravelly sandy loam and loamy colluvial material, derived from acidic sandstone and shale, are parent materials of the Horseshoe soils. The map unit occurs on steep to excessively steep mountain slopes over elevations ranging from 1050 to 1500 m.

Agricultural climatic class 6 predominates throughout the high-elevation benchlands and foothills. The May to September precipitation exceeds 250 mm. Vegetation is characteristic of the subalpine Engelmann spruce-alpine fir forested subzone, which includes lodgepole pine.

Horseshoe soils (Plate IId) are well drained, rapidly to moderately pervious, and have a humid water regime. Eluviated Dystric Brunisols dominate the soils of the map unit. Regosols, and the orthic subgroup and the lithic phase of Brunisols, are common. Near the base of colluvial slopes gleyed soils occur along seepageways. The profile description and analysis of a selected Horseshoe soil are given in the Appendix. Horseshoe soils were first described and mapped in the foothills west of the Halfway River (Lord 1974) and were later mapped in the northeast coal study area (Vold et al. 1977). Palsson soil (Plate Id), an Orthic Regosol, turbic phase, of high alpine elevations, was mapped by Vold et al. (1977). A typical profile of the Palsson soil is described in the Appendix of the present report.

HS Horseshoe (13 128 ha): Lithic phrases of soils, bedrock, and Regosols are important components (20-40%) at the highest elevations of the map unit. On lower, somewhat gentler toe slope positions, gleyed soils may occupy significant parts of the map unit.

The Horsehoe map unit has no capability for agriculture, low capability for forestry, and limited use for moose and caribou.

Judah map units (12 271 ha)

Judah (JU) map units are dominated by Dark Gray Luvisols on loamy and clayey deposits on the glaciolacustrine plains of the Fort St. John, Clayhurst, and Cache Creek areas. They occupy 1% of the map area.

The principal landforms are portions of the basins of former glacial lakes. Much of the landscape consists of a succession of large irregularly shaped mounds ("humpies") separated from one another by flat areas. The Judah map units occur on brown, moderately calcareous, silty clay loams and silty clays at elevations below 750 m.

Judah map units are found under the relatively mild climates of broad lowland valleys. The climate capability for agriculture is rated as class 2, with more than 75 freeze-free days and growing degree-days within the range of 1170-1309. The May to September precipitation is about 250 mm. The native cover is mainly trembling aspen, black cottonwood, and willows. Semiopen grass and shrub-covered areas occur on drier slopes and mounds.

Judah soils are well drained, moderately pervious, and have a subhumid water regime. The Dark Gray Luvisols have thick Ah or Ahe horizons, Ae horizons, and well developed, blocky-structured Bt horizons. Concentrations of lime carbonates occur at depths of 50-60 cm. The profile description and analysis of a selected Judah soil profile are given in the Appendix. Judah soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950).

JU Judah (8986 ha): The JU map unit is of limited extent, being confined mainly to areas near the Beatton River and Cache Creek. Orthic Gray Luvisols (Davis and Kathleen) on variable silty fluvial materials and poorer drained soils are commonly associated with Judah soils in this unit.

JU-GO Judah-Goose (3285 ha): The JU-GO map unit occurs mainly in the lower part of the Cache Creek drainage system. Although Judah, with some Davis soils, dominates the gently to moderately rolling topography, poorly drained Goose soils occupy 30-40% of the map unit.

The Judah map units are rated as good agricultural land. The presence of strongly ridged and mounded landforms and wet depressions reduces the capability of some areas of the JU-GO map unit. The map units have severe to moderately severe limitations to the growth of white spruce and trembling aspen. These lands, rated as forest capability class 4 or 5, are limited by restrictions to rooting depth and combinations of soil moisture deficiency and excess water. Excessive snow depth in some years is the main limitation to the capability of the map units to sustain deer and moose.

Kathleen map units (15 102 ha)

Kathleen (KT) map units are dominated by Orthic Gray Luvisols on loamy and clayey deposits in the glaciolacustrine plains of the Fort St. John, Clayhurst, and Cache Creek areas. The Kathleen map units occupy 1.1% of the map area.

The principal landforms are portions of the basins of former glacial lakes. Much of the landform consists of a succession of large, irregularly shaped mounds ("humpies") separated from one another by flat areas.

The Kathleen map units occur on brown, moderately calcareous, silty clay loams and silty clays at elevations below 750 m.

Kathleen map units fall within the relatively mild climates of broad lowland valleys. The climate capability for agriculture is rated class 2, with more than 75 freeze-free days and growing degree-days within the range of 1170-1309. The May to September precipitation is about 250 mm. The native cover is mainly trembling aspen, white spruce, and willows. Semiopen grass and shrub-covered areas occur on drier slopes and mounds.

Kathleen soils are well drained, moderately pervious, and have a subhumid water regime. The Orthic Gray Luvisols have fairly thick loamy Ae horizons and thick, friable, silty clay Bt horizons overlying Cca horizons at 50-60 cm. The profile description and analysis of a selected Kathleen soil profile are given in the Appendix. Kathleen soils were first named and described in the Peace River area of Alberta (Odynsky et al. 1952).

KT-JU Kathleen-Judah (7019 ha): The KT-JU map unit occupies large areas of land north of Taylor and east to the Beatton River. Judah soils make up 30-40% of the unit, which is dominated by mounded, "humpy" landforms.

KT-NP Kathleen-Nampa (8003 ha): Within the KT-NP map unit, the more heavily textured, more saline Nampa soils make up about 30% of the unit. Organic soils (Eaglesham) are often present as minor components.

The Kathleen map units are rated as good to fairly good agricultural lands. The presence of strongly ridged and mounded landforms and poorly drained depressions severely reduces the capability of some areas of the KT-NP map unit. The map units have severe to moderately severe limitations to the growth of white spruce and trembling aspen. These forest capability classes 4 and 5 lands are limited by restrictions to rooting depth and combinations of soil moisture deficiency and excess. Excessive snow depth in some years is the main limitation to the capability of the map unit for sustaining deer and moose. Adjacent to Cache Creek, moose depend to a large degree on areas of the KT-NP unit for winter range.

Kenzie map units (40 342 ha)

Kenzie (KZ) map units consist mainly of bogs dominated by Terric Mesisols on moss peats. They occur throughout the area in association with many other map units. The Kenzie map units occupy 2.9% of the map area.

Bogs (Plate IIe) are in low-lying or level areas and consist of peaty materials derived mainly from sphagnum mosses and woody plant remains in a strongly acid environment. The peat is saturated with water and occurs generally as a blanket 1-2 m thick over mineral materials.

The map units occur under most classes of regional climate. Local frost pooling is characteristic of peatlands in depressions and lower landscape positions. Black spruce, common Labrador tea, mosses, and shrubs dominate the vegetative cover.

Kenzie soils are very poorly drained, slowly pervious, and have an aqueous water regime. The Kenzie map units are dominated by strongly acid peats with fibric surface horizons (Of) and somewhat more decomposed subsurface horizons (Om). Kenzie soils form extensive flat bogs (muskegs) in northerly plateau areas of poorly drained, nearly level lands. Frozen layers sometimes persist in subsurface peat horizons into late summer. A Kenzie soil is described in the Appendix. Kenzie soils were first named and described in the Peace River area of Alberta (Odynsky and Newton 1950).

KZ Kenzie (31 412 ha): Organic soils, mainly sphagnic phases of Terric Mesisols, occupy more than 50% of the map unit. Variable amounts of deeper bog soils with inclusions of fen landforms make up the balance.

KZ-SU Kenzie-Sundance (8930 ha): This map unit contains about 30% of sandy hummocks (Sundance) with inclusions of fens and peaty phase Gleysols. A large area of duned sands and muskeg bogs occupies lands at the junction of the Cameron and Halfway rivers.

Under their present climate and water regime, the Kenzie map units have little potential for agriculture and forestry but have only slight limitations for sustaining moose and deer. Many large muskegs act as valuable water reservoirs.

Kobes Creek map unit (5340 ha)

The Kobes Creek (KO) map unit is dominated by Brunisolic Gray Luvisols on sandy veneer overlying till. A single large area of the map unit occurs near Ground Birch Creek. The map unit occupies less than 1% of the map area.

The KO-BY map unit occurs on veneers of silty and sandy materials at elevations mainly below 750 m. The veneers overlie both noncalcareous clayey till and calcareous clayey materials. Topography is gently to moderately sloping.

Although the agricultural climate class is not identified in the area of the map unit (Fig. 5), most of the unit could be expected to have class 3 climate, with class 5 occurring on higher slopes. May to September precipitation is about 250 mm. The vegetation consists of trembling aspen, lodgepole pine, and mixed shrubs and forbs.

Kobes Creek soils are well drained, slowly pervious, and have a perhumuid water regime. Kobes Creek, the dominant soil of the map unit, is characterized by silty to fine sandy loam Ae and Bt horizons that overlie acidic clayey and loamy till and shaly materials at depths of 30-60 cm. This strongly acid soil is associated with Brunisolic Gray Luvisols on calcareous loamy and clayey deposits (Beryl).

KO-BY Kobes Creek-Beryl (5340 ha): Within the survey area, the KO-BY map unit contains 30-50% Beryl soils and imperfectly drained Gray Luvisols. West of the survey area, map units of Kobes Creek extend to elevations of 900 m along the base of Butler Ridge.

Agricultural capability ranges from classes 3 and 4 at lower elevations to classes 4 and 5 on steeper topography at higher elevations. The map unit is rated class 3 (5.0-6.3 m^3/ha per year) for forest capability. The main limitation to the growth of white spruce and trembling aspen is soil moisture deficiency. The lands of the KO-BY map unit have moderately high capability for sustaining moose and deer and provide good winter range for moose.

Lynx map units (52 973 ha)

Lynx (LY) map units are dominated by Brunisolic Gray Luvisols on loamy glaciofluvial materials. They occur mainly on the plains adjoining the valley of the Peace River and most of its main tributaries. The Lynx units occupy 3.8% of the map area.

The variable sandy and silty sediments from which the Lynx soils formed are strongly calcareous and variable in thickness. The Lynx map units occur below elevations of 750 m. Topography is mainly gently to moderately sloping except in areas adjoining main rivers, where mounds or "humpie" landforms frequently have cross-bedded strata and appear to have been reworked by wind action.

Lynx map units occur mainly under the relatively mild agricultural climate class 2 associated with broad lowland plains. The remaining areas are in climate class 3. The May to September precipitation is about 250 mm. The native cover is mainly trembling aspen, white spruce, black cottonwood, and willows. Semiopen grass- and shrub-covered areas occur on drier slopes and mounds.

Lynx soils are well drained, moderately pervious, and have a humid water regime. The most common soil of the map units is a Brunisolic Gray Luvisol with brown sandy loam Bm and Ae horizons, and a thin loamy Bt horizon overlying a calcareous Ck horizon about 30 cm from the surface. The profile description and analysis of a selected Lynx soil profile are given in the Appendix. Lynx soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

LY-EG Lynx-Eaglesham (30 967 ha): Lynx soils occupy 40-60% of this map unit on the better drained hummocks and ridges. The remaining soils of level and depressional areas are poorly drained Organics (Kenzie and Eaglesham) and peaty phase Gleysols or carbonated Gleysols (Centurion). The agricultural capability of the map unit is restricted by limitations of topography and wetness.

LY-SU Lynx-Sundance (22 006 ha): In a number of areas the sandy Sundance soils occupy 40-60% of the unit, with lesser amounts of Organic soil inclusions. In most areas adverse topography or low soil moisture holding capacity severely limit the agricultural capability of the unit.

Land capability for forestry on Lynx map units is moderate to moderately severe (classes 3 and 4) for production of lodgepole pine and white spruce. The poorly drained component of the map units is rated class 6 or 7 for black spruce. The map units have slight limitations of excessive snow depth for sustaining moose and deer and are important wintering ranges for moose.

Meikle Creek map units (5154 ha)

Meikle Creek (ME) map units are dominated by Cumulic Regosols on noncalcareous sandy fluvial deposits in the benchlands and foothills. They occupy less than 1% of the map area.

In the floodplain of the Pine River west of Chetwynd and in the valley of the West Moberly River, some low-lying areas of sandy loam and loamy sand deposits are subject to flooding. The map units occur on level to gently sloping topography at elevations below 600 m.

The climate capability for agriculture in the upper Pine and Moberly river valleys is class 3GF. The May to September precipitation is 250 mm or more. White spruce, black cottonwood, and shrubs predominate in the vegetative cover.

Meikle Creek soils are well drained, rapidly pervious, and have a humid water regime. Soil development is weakly expressed in Regosolic soils but Brunisols occur on some older, slightly raised terraces. Although Meikle Creek soils are quite similar in texture and development to other soils on fluvial materials, they are less calcareous than Oetca and Bear Flat soils. Meikle Creek soils were first named and described as a soil association in a study of the northeast coal fields (Vold et al. 1977).

ME Meikle Creek (2759 ha): This map unit occurs on level floodplain terraces, portions of which may be subject to occasional floods. In general, the map unit has only minor limitations for agriculture within the class 3 agricultural climate.

ME-EG Meikle Creek-Eaglesham (1599 ha): Only one area of this map unit, which is on the floodplain of the West Moberly River, occurs. It contains about 20-40% Eaglesham soils and inclusions of poorly drained Regosols. Agricultural use is confined mainly to pasture and hay production.

ME-PT Meikle Creek-Portage Creek (796 ha): Relatively large areas of the ME-PT map unit occur west of Chetwynd in the Pine River valley and west of Moberly Lake. Portage Creek soils may occupy some 30-50% of the unit, occurring on slightly higher and drier terraces and fans. The Portage Creek soils contribute variable amounts of gravel and cobbles to the map unit.

Forest productivity is variable; black cottonwood has a high capability on the floodplain soils, and white spruce and lodgepole pine have moderate capability. The Meikle Creek map units generally provide good carrying capacity and excellent winter range for moose and deer.

Moberly map units (178 408 ha)

Moberly (MO) map units are dominated by Brunisolic Gray Luvisols on calcareous loamy till of cordilleran origin. The seven map units are distributed throughout the western benchlands and uplands of the Alberta Plateau and in the Rocky Mountain Foothills. The Moberly map units occupy 12.8% of the map area.

The morainal landform is composed mainly of a loamy-textured till blanket at elevations over 650 m or a veneer on bedrock at 1000-1200 m in the foothills area. The Moberly map units occur on moderately calcareous clay loam to loam cordilleran till that may be covered with up to 15 cm of sandy gravelly capping. Topography is moderately to strongly sloping in most map units but may be very steep to extreme in some MO2, MO-HS, and MO-SQ units.

Practically all Moberly map units are in agricultural climate capability class 5. The class has a freeze-free period of 30-49 days and 780-1029 growing degree-days. The May to September precipitation exceeds 250 mm. The native vegetation is mixed stands of lodgepole pine, white spruce, and trembling aspen, with alder, willow, grasses, and forbs in the understory.

Moberly soils (Plate IIb) are well drained and moderately well drained, moderately to slowly pervious, and have a perhumid water regime. The typical Brunisolic Gray Luvisol profile has a leached Ae horizon, a brown loamy Bm horizon, and a more finely textured Bt horizon that overlies calcareous parent material. The profile description and analysis of a selected Moberly soil are given in the Appendix. Moberly soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965). The Moberly Association was later mapped in the northeast coal study area (Vold 1977). Associated soils that have a sandy capping 15-50 cm thick are similar to Lodge soils described in Alberta (Dumanski et al. 1972). A Lodge soil is described in the Appendix of the present report.

MO1 Moberly 1 (79 413 ha): This map unit is commonly found on the gentler slopes at lower elevations, where the depth of the till mantle over bedrock exceeds 1 m. Occasional areas of the shallow MO2 unit are included.

MO2 Moberly 2 (45 289 ha): The MO2 unit predominates at higher elevations, where the till is generally less than 1 m thick over bedrock. Stones and gravel, rock outcrops, and very steep topography are common.

MO-CN Moberly-Codner (13 544 ha): The occurrence of this map unit is limited to stream valleys in the southern uplands and foothills. Poorly drained Codner soils occupy 30-40% of the unit.

MO-CY Moberly-Clayhurst (18 465 ha): Several large areas of the MO-CY map unit lie at quite low elevations between the Pine and Peace rivers. Sandy and gravelly materials form veneers over till or predominate over much of the surface area of the map unit.

MO-HS Moberly-Horseshoe (11 229 ha): Shallow soils developed from till and colluvium on steep slopes characterize this unit. The MO-HS unit occurs mainly in the Coldstream River drainage system. Horseshoe soils may occupy 40-60% of the unit.

MO-LY Moberly-Lynx (5792 ha): A single large delineation of this map unit occurs in the upper Farrell Creek area north of Hudson Hope. The unit contains from 30 to 50% Lynx soils and lesser amounts of Organic soils and Gleysols.

MO-SQ Moberly-Squaw Mountain (4676 ha): The MO-SQ map unit has soil and landform components similar to those of the MO-HS unit; it is confined to boreal regions of the foothills southwest of Chetwynd. Squaw Mountain soils are Eluviated Dystric Brunisols on gravelly, loamy, noncalcareous colluvium; the Squaw Mountain Association is described in the report of the northeast coal study (Vold et al. 1977).

The adverse climate limits agriculture on practically all map units of Moberly soils to the raising of forage crops and pasture. Adverse topography and stoniness are additional limitations in some map units. Growth of commercial forest trees ranges from 5.0 to 6.3 m^3/ha per year (class 3) for white spruce and lodgepole pine on the better drained soils and is rated class 5 or lower on poorly drained sites. Land capability for sustaining wild ungulates is moderately good; some units provide good winter range.

Murdale map units (13 869 ha)

Murdale (MU) map units are dominated by Dark Gray Solods on loamy and clayey till of continental origin. The map units are confined mainly to uplands near Dawson Creek and Fort St. John. The Murdale map units occupy 1% of the map area.

The morainal landform is composed mainly of a till blanket that occupies steep, south-facing slopes over elevation ranges of 700-825 m. The till is grayish brown, weakly calcareous, slightly saline, and slightly to moderately stony.

The units occur in class 3 agricultural climate, where the May to September growing period has a range from 1030 to 1169 growing degree-days. The crops successfully grown here include cereal grains, forages, seed crops, and cool-season vegetables. The May to September precipitation is about 250 mm. Vegetation consists of grasses and forbs, with scattered clumps of trembling aspen and shrubs.

Murdale soils are well drained, moderately pervious, and have a humid to subhumid regime. The soil profile shows a well developed, dark-colored Ah horizon, a thin Ae horizon, and a strongly structured Bn horizon. The lower part of the solum grades down through strongly acidic transition horizons to accumulations of lime and gypsum salts at depths of 80 cm or more. The profile description and analysis of a Murdale soil are given in the Appendix. Black Solods and Solonetzic Gray Luvisols are common associates in the map units. Murdale soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

MU Murdale (5007 ha): This map unit occupies relatively shallow soils on steep upper slopes above the lowland plains. On open slopes, Alcan soils and lithic phase soils occupy 20-40%. The unit has some value as grazing land for domestic stock and deer, but has no forest capability.

MU-ES Murdale-Esher (8862 ha): The MU-ES unit generally lies below the MU unit on gentler slopes. It commonly has a component of about 40% Esher soils developed on lacustrotill. Where topography is not limiting, the map unit is rated mainly as class 3 agricultural capability. The soils have limited capability for tree growth.

Neumann map units (4920 ha)

Neumann (NE) map units are dominated by Eluviated Dystric Brunisols on gravelly sandy glaciofluvial materials. In the map area these units occur on the benchlands west of Fellers Heights. They occupy less than 1% of the map area.

Terraces and fans are typical landforms, but one area of hummocky kettled terrain is mapped. Elevations range from 750 to 1050 m. The parent materials of Neumann soils are gravelly sandy loam to very gravelly loamy sand fluvial and glaciofluvial deposits. The materials are calcareous below a depth of 100 cm.

The climatic capability for agriculture is class 5 for the Neumann units, that is, 30-40 days freeze-free period and 780-1029 growing degree-days. The May to September precipitation is more than 250 mm. Within the boreal white spruce zone, typical vegetation includes trembling aspen, black cottonwood, white spruce, lodgepole pine, and shrubs.

Neumann soils are well drained to rapidly drained, rapidly pervious, and have a humid water regime. Neumann soils are similar to the Portage Creek soils but are less calcareous throughout the solum. The profile description and analysis of a selected Neumann soil are given in the Appendix. Soils of the Neumann soil association are described in a report of the northeast coal study area (Vold et al. 1977).

NE Neumann (1837 ha): Some areas of the NE map unit contain Brunisolic Gray Luvisols developed on thin veneers overlying loamy till.

NE-CN Neumann-Codner (3083 ha): About 30% of the NE-CN map unit is composed of poorly drained Codner soils. Adverse climate, stoniness, and topography severely limit the agricultural capability of Neumann soils. Forestry capability is moderate for the production of lodgepole pine. The capability for sustaining moose is low. The terraces provide a moderately high carrying capacity for recreational use.

Oetca map units (3370 ha)

The Oetca (OE) map units are dominated by Cumulic Regosols on calcareous, sandy, fluvial materials. They occur in the lower Sukunka and Murray river valleys. Oetca map units occupy less than 1% of the map area.

The map units are below elevations of 600 m on level to moderately sloping floodplains of the Sukunka, Murray, and Pine rivers upstream from East Pine. The parent materials are loamy sand to sandy loam, calcareous fluvial materials that are frequently channeled and subject to flooding. Coarse-fragment content is low in the surface horizons, increasing with depth.

Climate capability for agriculture is class 3, that is, a freeze-free period of 60-74 days and 1030-1169 growing degree-days. The May to September precipitation is less than 250 mm. Typical vegetation includes white spruce, black cottonwood, shrubs, grasses, and forbs.

Oetca soils are well drained to rapidly drained, rapidly pervious, and have a humid water regime. Cumulic and Orthic Regosols occur on the floodplain; Eutric Brunisols commonly develop on the older, slightly raised terraces. Soil reaction is basic in all horizons. The profile description and analysis of a selected Oetca soil are given in the Appendix. Oetca soils were first described and mapped in tributary valleys west of the Halfway River (Lord 1974) and were later mapped in the northeast coal study area (Vold et al. 1977). Oetca soils are more calcareous and more gravelly than Meikle Creek soils.

OE Oetca (2939 ha): The OE map unit includes areas of poorly drained soils associated with high groundwater tables and gravel bars of the floodplain.

OE-WI Oetca-Widmark (441 ha): This map unit is confined to terraces near Chetwynd. Silty glaciofluvial soils (Widmark) are significant components, making up 30-50% of the unit.

In areas not limited by very coarse-textured soils, adverse topography, or frostiness, the map units are rated agricultural class 3. Oetca soils in the Sukunka River valley are rated classes 1 and 2 (6.4-9.1 m^3/ha per year) for production of black cottonwood.

The Oetca soils and the adjoining terraces of the Sukunka valley provide land with the highest capability for sustaining moose and providing winter range in the Peace River region. Similar areas in the Murray River valley carry slight limitations to sustaining populations of moose, deer, and elk.

Pingel map unit (1225 ha)

The Pingel (PG) map unit is dominated by Eluviated Eutric Brunisols on clayey colluvial deposits along the south side of the Peace River. The Pingel map unit occupies less than 1% of the map area.

The gently to moderately sloping clay-textured fans occur on intermediate terraces of the Peace River between the Kiskatinaw and Halfway rivers. The unit lies below an elevation of 500 m in scattered areas along the south bank of the river.

The Pingel map unit is in a zone of agricultural climate that is rated as class 3A, improving to class 1 under irrigation. The May to September precipitation is about 230 mm. Trembling aspen and lodgepole pine are the dominant trees.

Pingel soils are moderately well drained, slowly pervious, and have a humid water regime. The soils are shallow, weakly developed, and heavy textured. Pingel soils were described and mapped during the first soil survey of the Peace River region of British Columbia (Farstad et al. 1965).

PG-CY Pingel-Clayhurst (1225 ha): The Pingel soils of the map unit are highly productive for a wide range of crops. Adverse topography and low permeability of the subsoil are limiting in some areas. The amount of gravelly soils (Clayhurst) in the unit varies widely--on most terraces, the gravels are concentrated near the scarp face.

White spruce can produce 3.6-6.3 m^3/ha per year (class 4) on these lands. The unit provides important winter range for moose and deer.

Portage Creek map unit (4203 ha)

The Portage Creek (PT) map unit is dominated by Eluviated Eutric Brunisols on gravelly sandy fluvial materials associated with drainage systems in the western part of the map area. It occupies less than 1% of the map area.

The Portage Creek unit occurs on gravelly sandy and gravelly loamy sand glaciofluvial terraces at elevations below 900 m. The materials are calcareous below 50 cm in depth. Topography is level to gently sloping.

The agricultural climate capability is mainly class 3, but cold air drainage and a lower number of growing degree-days occur in some valleys. The May to September precipitation exceeds 250 mm. Within the boreal white spruce zone, typical vegetation includes trembling aspen, black cottonwood, white spruce, lodgepole pine, and shrubs.

Portage Creek soils are well drained to rapidly drained, rapidly pervious, and have a humid water regime. They are very similar to Clayhurst soils but are more calcareous than the

Neumann soils (described in the Appendix). Portage Creek soils were first described and mapped in tributary valleys west of the Halfway River (Lord 1974) and were later mapped in the northeast coal study area (Vold et al. 1977).

PT Portage Creek (4203 ha): The PT map unit may contain minor inclusions of Organic soils or Gleysols. The coarse gravelly soils have a low to moderate capability for agriculture, forestry, and ungulates and a high capability for recreation.

Robb map unit (3756 ha)

The Robb (RB) map unit is dominated by Eluviated Eutric Brunisols on loamy cordilleran till. The map unit occurs within the drainage of Coldwater Creek in the southern benchlands area. It occupies less than 1% of the map area.

The gravelly sandy loam to loamy parent material is calcareous till that overlies sandstone bedrock. The Robb map unit is on strongly to steeply sloping topography above an elevation of 900 m.

Climate classes 5 and 6 (less than 49 days freeze-free period and 1029-670 growing degree-days) occur in the benchlands. The May to September precipitation exceeds 250 mm. Dominant trees are lodgepole pine, Engelmann spruce, and subalpine fir, with white-flowered rhododendron and blueberries.

Robb soils are well drained, moderately to slowly pervious, and have a perhumid water regime. They occur on similar parent materials and in the same vegetation zone as Hambrook soils, but development is Brunisolic rather than Luvisolic. A profile of a Robb soil is described in the Appendix. Robb soils were first named and described in the Hinton area of Alberta (Dumanski et al. 1972).

RB Robb (3756 ha): The map unit includes variable amounts of Luvisols similar to Moberly and Hambrook soils. Robb soils are rated as having a low capability for agriculture, forestry, and wildlife (ungulates).

Rockland map unit (4381 ha)

The Rockland (RK) map unit is used for those areas where bedrock outcrops at the surface and dominates the map unit. Soil development is confined mainly to areas with more than 10 cm of soil material over consolidated rock. The terrain is usually steep and irregular: the map unit includes precipitous cliffs, talus slopes, and mountain ridges. The consolidated component consists of undifferentiated, indurated bedrock that is predominantly of sedimentary origin. The map unit occupies less than 1% of the map area.

RK Rockland (4381 ha): Steep, often precipitous mountain slopes, mountain ridges (Tuskoola Mountain), and areas of bedrock cliffs along river valleys are included in the map unit.

Rolla map unit (2756 ha)

The Rolla (RL) map unit is dominated by Black Solods on clayey and loamy glaciolacustrine deposits in the Rolla area near the Alberta boundary. It occupies less than 1% of the map area.

The parent materials are moderately and strongly calcareous, moderately saline, clayey, and loamy glaciolacustrine deposits at elevations below 700 m. Topography is moderately sloping except in areas adjoining the main rivers, where large mounds or "humpie" landforms are common.

The relatively mild agricultural climate of the glaciolacustrine basin is rated as class 2, with more than 75 freeze-free days and growing degree-days within the range of 1170-1309. The May to September precipitation is less than 250 mm. The native vegetation is trembling aspen and lodgepole pine, which once occurred in open stands with an understory of grasses, shrubs, and forbs.

Rolla soils are moderately well drained, slowly pervious, and have a subhumid water regime. The most common soil of the map unit is a Black Solod with a thick, granular Ah horizon, a Solonetzic Bn or Bnt horizon, and a calcareous Ck horizon at 55-60 cm. The closely associated Black and Dark Gray Solodized Solonetz (Rycroft) soils have platy Ae horizons and hard, columnar Bn or Bnt horizons. Rolla soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

RL-RY Rolla-Rycroft (2756 ha): The map unit is confined to the lacustrine plain that lies east of Rolla. The Rolla soil is intimately complexed with other soil subgroups and great groups of the Solonetzic order that together may make up 30-60% of the map unit. The rolling, mounded topographic pattern of the landscape restricts most of the map unit to agricultural capability class 3. The unit has very low capability for tree production. Lands in the map unit have only slight limitations to providing food and habitat for wild ungulates; they provide some winter range for moose.

Roseland map unit (7907 ha)

The Roseland (RO) map unit is dominated by Black Solods on loamy and clayey glaciolacustrine deposits near the Beatton River, south of Rose Prairie and near North Pine. It occupies less than 1% of the map area.

The map unit occurs on grayish brown, saline, weakly calcareous, silty clay loams and silty clays at elevations below 750 m. Topography is mainly gently to moderately sloping except in areas adjoining main rivers, where swarms of irregularly shaped mounds or "humpie" landforms are common.

The map unit occurs under the relatively mild agricultural climates of broad lowland valleys. The climate capability is rated mainly as class 2, with more than 75 freeze-free days and growing degree-days within the range of 1170-1309. The May to September precipitation is about 250 mm. The native cover is mainly trembling aspen, willows, shrubs, grasses, and forbs in open to semiopen stands.

Roseland soils are moderately well drained, slowly pervious, and have a perhumid to humid water regime. Soils of the map unit show wide variability in chemical characteristics. The presence of a hard, columnar, dark-stained Solonetzic B horizon (Bn or Bnt) places a soil in the Solonetzic order. But the B horizons often fail to meet the requirements (Btnj or Bnj), and the soils are classified in the Chernozemic or Luvisolic orders. Lime and gypsum salts usually occur at depths of 65-80 cm in the Csk horizon. Dark Gray or Black Solods with Ahe horizons 7-15 cm thick and distinct Ae and AB horizons predominate in the map unit. The profile description and analysis of a selected Roseland soil are given in the Appendix. Roseland soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

RO-FA Roseland-Falher (7907 ha): Falher and Esher soil together occupy 40-60% of the map unit. Most soils of the RO-FA map unit are rated as good (class 2 or 3 agricultural capability), with moderate to moderately severe limitations of topography and drainage that restrict the range of crops and harvesting methods. Falher soils have less acidic surface horizons and are generally more poorly drained than Roseland soils. The soils of the unit have severe to moderately severe limitations to the growth of white spruce and trembling aspen. These forest capability class 5 and 4 lands are limited by restrictions to rooting depth and combinations of soil moisture deficiency and excess. Excessive snow depth in some years is the map unit's main limitation in its capability for sustaining deer and moose.

Capability of this map unit for sustaining waterfowl is high. There are some slight limitations imposed by distribution patterns of marshes and by the variable water depths in the included wetlands.

Septimus map units (112 805 ha)

The Septimus (SS) map units consist of undifferentiated colluvial materials and soils on very steep slopes of river valleys and stream banks. The materials include loamy tills and shale and sandstone bedrock that may be mantled with combinations of glaciofluvial gravels, sands, silts, loess, and colluvium. Slumps and active erosion are common geological failing processes. Regosols and lithic phases of Brunisols and Luvisols characterize these tree- and shrub-covered map units. The Septimus map units occupy 8.1% of the map area.

SS Septimus (99 597 ha): The heavily treed SS map unit is located on northerly aspects along river valleys. Forest capabilities for white spruce and trembling aspen range from class 3 to class 6, depending on combinations of soil factors and moisture limitations. Adverse topography, instability, and shallow rocky soils prohibit agricultural activities and severely restrict forestry operations.

SS-AH Septimus-Attachie (13 208 ha): The more open vegetative cover on the SS-AH map unit provides slightly better conditions for livestock grazing but a lesser capability for forestry than the SS unit.

In general, both units provide an excellent wintering range for deer and moose.

Sloane map units (16 874 ha)

Sloane (SL) map units are dominated by thin veneers of sandy alluvium overlying clayey deposits in the lower Kiskatinaw River valley. They occupy 1.2% of the map area.

Sloane map units are on gently and moderately sloping landforms over elevations of about 750 m. The texture of the fluvial veneer ranges from sand to silt and the thickness from 10 to 16 cm over moderately calcareous clayey materials.

Sloane map units occur under the relatively mild climate of broad lowland valleys. The climate capability for agriculture is rated as class 2, with more than 75 freeze-free days and growing degree-days within the range of 1170-1309. The May to September precipitation is about 250 mm. The native cover is mainly trembling aspen, white spruce, black cottonwood, and willows.

Sloane soils are well drained, moderately to slowly pervious, and have a humid water regime. The Orthic Gray Luvisol has a thick platy Ae horizon and a silty clay Bt horizon overlying a moderately calcareous C horizon 40-50 cm below the surface. These horizons develop in the silty veneer that overlies the clay-textured parent material. Sloane soils were described and mapped during the first soil survey of the Peace River region of British Columbia (Farstad et al. 1965).

Coldstream soil, a Luvic Gleysol developed on moderately calcareous silty clay glaciolacustrine deposits, occurs in poorly drained depressions as an associate of Sloane and other soils of the glacial lake basins. The description and analysis of a selected Coldstream soil profile are given in the Appendix.

SL Sloane (9359 ha): About 20-50% of the SL map unit may be occupied by other soils, such as Donnelly, at slightly higher elevations or by Davis and Devereau soils on strongly rolling landforms near large river systems. This map unit is rated as fairly good agricultural land. The unit has severe to moderately severe limitations (class 4 or 5) to the growth of white spruce and trembling aspen. Limitations include restrictions to rooting depth and excess soil moisture. Deep snow in some years is the main limitation for wintering deer and moose.

SL-CD Sloane-Coldstream (7515 ha): At least 30% of the SL-CD map unit is composed of Luvic Gleysols such as Coldstream. The unit frequently contains Organic soils (Eaglesham) and peaty Gleysols. The map unit has moderately severe limitations for agriculture and forest capability, and its capability for sustaining wild ungulates is similar to that of the SL map unit.

Snipe map unit (30 200 ha)

The Snipe (SN) map unit is dominated by Orthic Luvic Gleysols on clayey till and glaciolacustrine materials. It occurs mainly in the watershed areas of Alces River and Septimus Creek. It occupies 2.2% of the map area.

The Snipe map unit occurs on till deposits and on variable mixtures of materials (lacustrotill) transported by ice and deposited in glacial lakes. These fine-textured deposits are weakly calcareous and saline and usually contain pebbles and weak stratifications. Elevations are generally below 750 m.

Areas of the Snipe map unit lie mainly under class 3 climate capability for agriculture, that is, 60-74 freeze-free days and 1030-1169 growing degree-days. The May to September precipitation is about 250 mm. Groundbirch, willows, sedges, and reeds form characteristic plant communities on Snipe soils.

Snipe soils are poorly drained, slowly pervious, and have an aquic to subaquic water regime. The soils may have a peaty surface; they have eluvial A horizons and a clayey Btg horizon. The profile description and analysis of a selected Snipe soil profile are given in the Appendix. Snipe soils were first named and described in the Peace River area of Alberta (Odynsky et al. 1952).

SN Snipe (30 200 ha): Most areas of the map unit contain 30% or more of Organic soils (Eaglesham and Kenzie) and other Gleysols (Codner). Gleyed Gray Luvisols make up a significant part of some areas.

In the map area the SN map unit has limitations that restrict the agricultural capability mainly to perennial field crops. The growth of commercial trees such as lodgepole pine and white spruce is severely limited by wetness. Most areas of Snipe soils provide good winter range for moose and an abundance of food plants during the year.

Sundance map units (53 902 ha)

Sundance (SU) map units are dominated by Brunisolic Gray Luvisols on sandy glaciofluvial deposits in the western part of the outwash plains. The map units occupy 3.9% of the map area.

The units occur below elevations of 750 m on sandy materials often underlain by gravel. The moderately calcareous deposits occur as dune fields in some areas. Topography ranges from smooth gentle slopes to steeply sloping irregular dune landforms.

Sundance map units occur under an agricultural climate class 3, with a freeze-free period of 60-74 days and 1030-1169 growing degree-days. The May to September precipitation is about 250 mm. The native cover is mainly lodgepole pine, trembling aspen, and grasses, with minor occurrences of white spruce and shrubs.

Sundance soils are well drained to rapidly drained, rapidly pervious, and have a subhumid water regime. In most areas the predominant soil development is Brunisolic Gray Luvisol. This profile, which is described in the Appendix, has sandy Bm and Ae horizons and a relatively thick, fairly continuous, well-structured Bt horizon. A common associate, an Eluviated Brunisol (Groundbirch), is also described in the Appendix. Gravel lenses and sandy veneers overlying gravel are common in some areas.

SU Sundance (21 335 ha): This map unit is associated mainly with the Murray and Pine rivers near East Pine. It is characterized by inclusions of gravelly materials and often by abruptly sloping, pitted outwash landforms.

SU-CD Sundance-Coldstream (12 712 ha): Sundance soils occupy greater than 50% of this map unit. The remaining soils of level and depressional areas are poorly drained Gleysols such as Coldstream and Centurion.

SU-KZ Sundance-Kenzie (19 854 ha): Very poorly drained Organic soils (Kenzie and Eaglesham) make up 30-50% of this map unit. Its occurrence is associated with Ground Birch and Farrell creeks and near the Pine River.

Agricultural capability of the units is rated as mainly class 4, but some areas of gravelly soils and adverse topography are rated as low as class 5 or 6. Moderate limitations of droughtiness result in a class 3 rating for growth of white spruce in most areas; lodgepole pine is generally rated lower. The Sundance map units have moderate capability for sustaining moose and deer, and some areas are well suited as winter range for moose.

Taylor map unit (3525 ha)

The Taylor (TY) map unit is dominated by Rego Black soils on clayey colluvial deposits along the north side of the Peace River and on terraces scattered along the lower Pine and Halfway rivers. The map unit occupies less than 1% of the map area.

The gently to moderately sloping, clay-textured fans occur on intermediate river terraces below an elevation of 500 m. Underlying materials are variable in texture and stratigraphy.

The Taylor map unit is in a zone of agricultural climate that is rated as class 3A, improving to class 1 under irrigation. The May to September precipitation is about 230 mm. Very little of the former vegetative cover of grasses, shrubs, and scattered trees remains today.

Taylor soils are well drained to moderately well drained, slowly pervious, and have a subhumid water regime. The soils have 10 cm or more of Ah horizon that overlies loamy or clayey C horizons and usually one or more buried A horizons. The profile descriptions and analysis of a selected Taylor soil profile are given in the Appendix. Rego Dark Gray soils and Regosols are associated with Taylor soils. Taylor soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

TY Taylor (3525 ha): In most areas Branham soils and Regosols make up 20-40% of the map unit. Soils of the TY unit are highly productive for a wide range of agricultural crops but have very severe limitations for the growth of white spruce and trembling aspen. The Taylor unit is an important component of prime winter range for deer and moose in the Peace River valley.

Widmark map units (7475 ha)

Widmark (Wl) map units are dominated by Eluviated Eutric Brunisols on localized glaciofluvial deposits that are near Chetwynd in the Pine River valley. The map units occupy less than 1% of the map area.

The parent materials are strongly calcareous, silty deposits some of which originated as small, ice-dammed ponding areas within the floodplain of the Pine River and the former river channel now occupied in part by Jackfish Lake. Elevations are within the range between 600 and 800 m. Topography is gently sloping.

The climatic capability for agriculture in the upper Pine River valley is class 3GF, that is, 60-74 freeze-free days and 1030-1169 growing degree-days. May to September precipitation is about 250 mm. Vegetation is dominated by trembling aspen, willows, and shrubs.

Widmark soils are moderately well drained, moderately pervious, and have a humid water regime. For the most part, the Widmark soils show some clay illuviation in B horizons, but it is insufficient to meet the criteria for the Bt horizon of a Luvisol. The profile description and analysis of a typical Widmark soil are given in the Appendix. Also included in the Appendix are the description and analysis of a Brunisolic Gray Luvisol (the Dickebusch soil from the northeast coal study area) (Vold et al. 1977) developed on similar parent material and within the same vegetation-climate zone. Widmark soils were described and mapped during the first soil survey of the Peace River region in British Columbia (Farstad et al. 1965).

Wl Widmark (5152 ha): Areas of the Widmark map unit may contain up to 40% sandy and gravelly soils (Sundance and Portage Creek) and lesser amounts of poorly drained soils (Centurion).

Wl-CE Widmark-Centurion (2323 ha): This map unit contains about 30% poorly drained Centurion soils and occupies low-lying positions on the valley floor.

Widmark map units have moderately severe limitations for growing a wide range of crops. Capability of the units for sustaining moose and deer is moderately high. Forest capability is moderate.

Zonnebecke map unit (29 570 ha)

The Zonnebecke (ZB) map unit is dominated by Eluviated Eutric Brunisols on colluvial veneers that occupy steep slopes of the southern benchlands and foothills. It occupies 2.1% of the map area.

The map unit occupies south-facing, very steep to extreme slopes between 600 and 1200 m elevation. The parent material is loamy colluvium that overlies sandstone or shale and is usually noncalcareous. Topography is very steep to extremely sloping.

The climate for agriculture is mainly class 5 or 6. May to September precipitation is 250 mm or more. Although lodgepole pine and trembling aspen are the dominant trees, they may be stunted or absent on nonforested south-facing slopes with grass and shrub vegetation.

Zonnebecke soils are well drained to moderately well drained, rapidly pervious, and have a semiarid soil water regime. Most Eutric Brunisols occurring on the dry, sparsely forested slopes, which predominate in the map unit, are lithic phase soils associated with Dystric Brunisols. The profile description and analysis of a selected Zonnebecke soil are given in the Appendix. Zonnebecke soils were first named and described as a soil association in a study of the northeast coal fields (Vold et al. 1977).

ZB Zonnebecke (29 570 ha): The ZB map unit has no capability for agriculture and forestry. It may have high to moderate capability for moose and deer, and provide valuable winter range.

LAND USE

The main resource sectors describing land use in the Peace River area were covered under the Canada Land Inventory (1965) program. The inventory classified lands according to their physical capability for use in agriculture, forestry, recreation, and wildlife (big game and waterfowl) and according to their present land use.

Early in the 1970s a study on land capability analysis was undertaken in the Peace River region (Canada Land Inventory 1972a). The area is in northeastern British Columbia, east of the Rocky Mountains and adjacent to Alberta. The project, which covered 45 700 km^2 (4 570 000 ha), includes the present report area. In the land capability analysis data were used from existing soil and land surveys supplemented with new surveys and short-term climatic networks.

Each land capability sector independently surveyed and classified units of land on a seven-class rating system. Environment Canada published the results as individual sector maps with accompanying narratives (the 14 capability maps that cover the current report area are listed in the References). The analysis (Canada Land Inventory 1972a) shows only the best or primary capability of the land as determined by the sector with the highest rating. To determine secondary and complementary uses of land, the map user must refer to individual sector maps and reports (available from Maps B.C., Ministry of Environment, Victoria, B.C.). At the published scales of 1:125 000 and 1:250 000, the information on sector maps is suitable for regional planning but is too generalized for more detailed site evaluation.

No attempt is made in the present report to provide maps showing soil interpretations for any sector of natural resources. However, derived and interpretive maps can be made available following the publication of this report. A wide range of such maps, including those showing texture groups, drainage, geological materials, and wetlands, can be produced by Agriculture Canada from original soil information. The following notes on agriculture, forestry, big game, waterfowl, and recreation supplement and summarize information on land capability given under individual map unit descriptions.

Prime agricultural lands (classes 1, 2, and 3) are predominantly on loamy and clayey soils of the glaciolacustrine basins and outwash plains. These lands lie below the 750 m contour, mainly within the older agricultural settlements of Fort St. John, North Pine, Clayhurst, Dawson Creek, Rolla, and

Sunset Prairie. Additional blocks of prime lands occur in newly developing areas, such as Beryl Prairie and along the lower Moberly River. The recent damming and subsequent control of river flow on the Peace River has opened up areas of first-class agricultural lands in the valley of the Peace River. Recent updating and re-evaluation of climatic data for the Peace River area (Cheesman and Davis 1982; Cheesman 1983) could have significant effects on agricultural capability ratings. In 1973 Runka provided a methodology for rating agricultural lands in British Columbia; in 1983 Kenk and Cotic produced a revised manual of land capability for agriculture in British Columbia.

High-yield forest lands (mean annual increment of more than 5 m^3/ha) are found in areas where blankets of continental or cordilleran till occur below elevations of 950 m. Some areas where loamy deposits overlie clayey materials (Beryl, Codesa, and Kobes Creek soils) also produce prime forests. Some of the highest species yields were recorded for black cottonwood on the floodplain of the Peace River. Kowall provided a methodology for land capability for forestry in 1971.

Prime big-game land is important for overwintering populations of ungulates, primarily moose and deer, as well as providing a year-round source of food and shelter. Such key areas occur on the fluvial floodplains and colluvial valley slopes of the Peace, Beatton, Halfway, Cache, and lower Moberly, Pine, and Sukunka rivers.

Prime waterfowl lands that have a high capability for potential production or migration, or both, are quite rare and scattered. These sites are Charlie, Cecil, Boundary, and Boudreau lakes, and wetlands associated with agricultural croplands on glaciolacustrine materials near North Pine and in the Rolla area.

Recreation capability in the area is severely limited. Most important are Moberly and Charlie lakes, with moderate to prime capability for angling, boating, camping, and cottages. The Peace River valley and a few of the major tributary river valleys offer a fairly wide range of recreation activities, particularly where such landforms as terraces, fans, and floodplains are accessible and suitable.

DERIVED AND INTERPRETIVE MAPS

Agriculture Canada is able to produce maps based on the soil information presented here. These maps may be either interpretive, like those indicating the soil capability for wildlife, or they may be derived from the original soil information, such as those displaying texture, slope, or drainage features. They can be made because the original boundaries and map unit symbols are stored in a computer as part of the Canada Soil Information System (CanSIS).

Soil maps are drafted by the Cartography Section, Land Resource Research Institute, Agriculture Canada, Ottawa. As part of the procedure, map unit symbols and the location of map unit boundaries are recorded in a computer. The soil map is therefore stored in its color printed form or as a black-and-white printout from the computer. In conjunction with the computer map, a list of all the map unit symbols and the areas they cover has also been prepared. This list is called the map index linkage. Agriculture Canada thus has the means to list, by these symbols, all the map units of a soil map and to reproduce the map itself as lines and symbols on a plain transparent sheet of paper. This system provides the capability to produce additional types of derived or interpretive maps as the need arises.

It is possible that a map showing only the various types of geological materials is required. With this procedure, the original map unit symbol is replaced by a new symbol that indicates the type of geological material. The same boundaries are retained, with the exception of those that have the same new symbols on either side. In this case the boundary is deleted. No new boundaries are added.

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APPENDIX

DESCRIPTIONS AND ANALYSES OF SOILS

This Appendix lists, in alphabetical order, profile descriptions of most of the soils in the Peace River area. Some descriptions, with their accompanying chemical and physical data, were drawn from adjoining soil survey report areas, usually where the soils were first named and described.

Federal or provincial laboratories used standard methods of soil analysis (McKeague 1976) for the survey projects. Further details can be found in soil survey reports or can be obtained by contacting the specific agency.

ALBRIGHT SOIL

Location: 56°05'N 119°54'W
NE12-82-2-W6th

NTS: 84D

Surveyor: WO

Agency: ARC, Edmonton, Alta., 1965

Identification: Alberta Soil Survey Report 23

Classification: Dark Gray Solod (1978)

Landform and parent material: lacustrotill, long uniform slopes

Drainage: moderately well drained

Slope and aspect: undulating to gently rolling

Additional notes: electrical conductivity in Csk horizon at 300 cm is 1.9 m S/cm

Vegetation: trembling aspen with shrubs and grasses

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	2.5-0	dark brown (10YR 3/3 m) leaf litter			
Ahe	0-8	dark grayish brown (10YR 4/2 m)	silt loam	weak granular	friable
Ae	8-13	pale brown (10YR 6/3 m)	silt loam	platy	friable
AB	13-18	brown (10YR 5/3 m)	clay loam	subangular blocky	firm
Bnt1	18-26	dark grayish brown (10YR 4/2 m)	silty clay	weak columnar	very firm
Bnt2	26-36	dark brown (10YR 3/3 m)	silty clay	strong blocky	very firm
BC	36-56	dark brown (10YR 3/3 m)	clay loam	subangular blocky	firm
Ccasa	56+	very dark grayish brown (2.5YR 3/2 m) with strata of yellowish brown (10YR 5/4 m)	clay loam with strata of gravelly sandy clay loam		

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay
L-H	5.6	5.5	0.5	11	26.3	16.3	1.6	0.8	0.5				
Ahe	5.3	2.7	0.3	9	20.1	12.1	0.4	0.4	0.4	16	64	20	8
Ae	5.5	1.1	0.1	10	11.0	6.3	0.8	0.1	0.3	14	70	16	3
AB	5.3	0.8	0.1	9	17.5	8.1	4.6	0.2	1.2	16	47	37	23
Bnt 1 & 2	5.0	0.8	0.1	11	25.8	9.3	10.1	0.3	2.1	14	48	38	25
BC	5.6	0.7	0.1	11	24.8	9.7	9.2	0.0	4.0	16	41	33	21
Ccasa	7.3									16	45	39	18

ALCAN SOIL

Location: 56°49'N 121°15'W
5 km N of Mile 18 on Beatton River Road

NTS: 94A14

Surveyor: AG

Agency: AC, Vancouver, 1968

Identification: BC Soil Survey Report 17

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: till

Drainage: moderately well drained

Slope and aspect: 10% E

Elevation: 870 m

Additional notes: Stop No. 98; Dunvegan formation; pink granites and quartzites occur with sandstone in parent material

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	4-2.5	undecomposed leaves, twigs, needles, and moss				
F	2.5-0	dark colored semi-decomposed leaves and twigs				
Ae	0-7.5	grayish brown (10YR5/2 d), dark brown (10YR 3/2 m)	silt loam	strong, medium platy	slightly hard, friable, slightly plastic	common, medium, fine
AB	7.5-14	very pale brown (10YR 7/3 d), light yellowish brown (10YR 6/4 m)	silty clay loam	strong, medium subangular blocky	slightly hard, firm, plastic	common, medium, fine
Bt1	14-37	very pale brown (10YR 7/3 d), brown-dark brown (10YR 5/3,4/3 m)	clay	strong, medium subangular and angular blocky	hard, firm, sticky	few, fine, medium
Bt2	37-63	very pale brown (10YR 7/3 d), brown (10YR 5/3 m)	clay	weak columnar breaking to moderate subangular blocky	very hard, firm, sticky	few, fine, medium
BC	63-90	light brownish gray (10YR 6/2 d), dark grayish brown (10YR 4/2 m)	clay loam	moderate, medium and coarse angular blocky	very hard, firm, sticky	occasional root
CB	90-120	pale brown (10YR 6/3 d), dark grayish brown (10YR 4/2 m)	clay loam	moderate, fine and medium angular blocky	very firm, sticky	occasional root
C1	120+	dark gray (10YR 4/1 m)	clay loam	weak, medium pseudo-angular blocky	firm, very plastic	very few

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)				Bulk density	P1 (ppm)	S (ppm)
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay			
Ae	4.5	1.0	0.7	8.9	2.5	1.7	0.3	0.1	24	60	16	2		5	92
AB	4.4	0.8	0.1	14.0	3.8	2.4	0.3	0.1	15	49	36	12	1.7	3	124
Bt1	4.0	0.7	0.1	23.6	5.2	3.0	0.3	0.1	12	35	53	23		4	106
Bt2	3.9	0.5	0.1	21.6	4.9	3.1	0.3	0.1	21	36	43	21		10	156
BC	4.0			18.8	5.8	3.4	0.2	0.1	25	40	35	16		21	137
CB	4.5			19.4	9.6	4.8	0.2	0.2	22	41	37	16			
C1	6.4			15.9	10.9	4.6	0.2	0.2	25	43	32	13			
till (@ 240 cm)	7.5								27	41	32	12			286

BEAR FLAT 1 SOIL (a)

Location: 56°07'N 120°36'W SW21-T82-R17-W6th	NTS: 94A2	Surveyor: AG	Agency: AC, Vancouver, 1982
Identification: BC Soil Survey Report 42	Classification: Orthic Regosol (1978)		Landform and parent material: deep, fine sandy fluvial-gravel
Drainage: rapidly drained	Slope and aspect: nil	Elevation: 365 m	Additional notes: site is on a new clearing on a former island, S of Peace River bridge; very weak effervescence from surface down

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
Ap	0-16	dark grayish brown (10YR 4/2 d) very dark grayish brown (10YR 3/2 m)	silt loam	moderate, medium subangular blocky breaking to weak subangular blocky	slightly hard, very friable, plastic	few, fine, verical, inped
C1	16-40	very dark grayish brown (10YR 3/2 m)	silt loam	moderate, pseudo-blocky breaking to weak pseudo-blocky	very friable, plastic	nil
C2	40+	very dark grayish brown (2.5Y 3/2 m)	fine sandy loam	very weak pseudo-blocky breaking to single grain		nil

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			P1 (ppm)	Electrical cond. (mS/cm)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay		
Ap	7.7	2.9	0.2	15.8	10.5	25.4	1.6	0.3	0.0	10	74	16	14	
C1	7.6	1.5	0.1	13.9	7.6	21.7	1.4	0.2	0.0	18	70	12	1	1.6
C2	7.4	0.9	0.1	13.2	5.2	13.6	1.1	0.1	0.0	70	22	8		
100 cm	7.5	1.0	0.1	14.9	5.5	18.5	1.1	0.2	0.0	57	34	9		

BEAR FLAT 1 SOIL (b)

Location: 56°07'N 120°41'W
Plot No.2 in Peace Island Park

NTS: 94A2

Surveyor: AG

Agency: AC, Vancouver, 1982

Identification: BC Soil Survey Report 42

Classification: Orthic Regosol (1978)

Landform and parent material: deep, fine sandy-loamy-gravel

Drainage: rapidly drained

Slope and aspect: nil

Elevation: 365 m

Additional notes: site on river bank along abandoned channel; horizon C2 is finely cross-bedded micaceous sand

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F	2-0	dead grass, leaves				
Bmj	0-10	grayish brown (10YR 5/2 d), dark grayish brown (10YR 4/2 m) with very dark brown (10YR 2/2 m)	sandy loam	very weak, medium subangular blocky	loose	few, fine and medium, vertical, exped
C1	10-20	dark grayish brown (10YR 4/2 and 10YR 6/2 d), very dark grayish brown (10YR 3/2-3/1 m)	silt loam	moderate, pseudo-angular blocky	friable, plastic	abundant, coarse-fine
C2	20-43	grayish brown (2.5Y 5/2 d), very dark grayish brown (2.5Y 3/2 m)	loamy fine sand	single grain	loose	plentiful, fine, vertical
C3	43-73	grayish brown (10YR 5/2 d), very dark grayish brown (10YR 3/2 m)	sandy loam	weak, pseudo-blocky breaking to single grain	slighty hard, friable	few, fine, vertical
C4	73-133	grayish brown (10YR 5/2 d), very dark grayish brown (10YR 3/2 m)	silt loam	weak, coarse, pseudo-blocky breaking to single grain	slighty hard, friable	few, fine and medium, vertical

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			Oxalate (%)		Pyrophos. (%)		P1	Electrical cond.
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al	Fe	Al	(ppm)	(mS/cm)
Bmj	7.7	2.1	0.2	13.8	8.9	15.0	1.8	0.8	0.0	64	30	6	0.5	0.1	0.1	0.0	29	
C1	7.8	2.3	0.2	13.9	9.5	18.4	1.8	0.6	0.0	29	61	10	0.4	0.1	0.1	0.0	4	
C2	7.6	0.4	0.0	10.8	3.2	15.4	0.8	0.2	0.0	79	16	5					2	
C3	7.5	0.6	0.0	12.2	3.5	14.6	0.7	0.1	0.0	64	29	7						
C4	7.7	1.2	0.1	12.8	6.1	19.9	1.7	0.1	0.0	16	73	11						0.4

BEATTON SOIL

Location: 56°02'N 118°50'W
SE1-T82-R6-W6th

NTS: 84D

Surveyor: WO

Agency: ARC, Edmonton, 1965

Identification: Alberta Soil Survey
Report 23

Classification: Gray Solod (1978)

Landform and parent material:
lacustrine clay that is
calcareous and saline

Drainage: moderately well drained

Slope and aspect: variable topography

Additional notes: peds in Bnt
horizon have dark organic
staining

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	2.5-0	dark grayish brown (10YR 4/2 m)	leaf litter		
Ahe	0-2.5	dark grayish brown (10YR 4/2 m)	silt loam	weak granular	friable
Ae	2.5-8	very pale brown (10YR 7/3 m)	silt loam	strong platy	friable
AB	8-15	grayish brown (10YR 5/2 m)	silty clay	subangular blocky	firm
Bnt	15-40	dark brown (10YR 3/3 m)	clay	columnar, blocky	firm
BC	40-60	dark brown (10YR 3/3 m)	silty clay	blocky	firm
Csaca	65	dark grayish brown (10YR 4/2 m) very dark grayish brown (2.5Y 3/2 m)	silty clay clay (strata)		
Csk	65+				

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Electrical cond. (mS/cm)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	
L-H	6.7	3.4	0.2	14										
Ae	5.3	0.5	0.1	9	6.7	1.8	2.1	0.2	0.2	20	63	17	3	
AB	5.1	1.1	0.1	13	19.2	5.0	9.2	0.6	0.4	9	51	40	21	
Bnt	5.1	1.1	0.1	13	32.9	8.9	18.1	0.6	1.0	1	32	67	43	
BC	7.3	0.9	0.1	13	30.2	8.4	19.9	0.6	1.2	1	42	57	33	2.3
Csaca	8.0	0.7	0.1	11						1	43	56	27	6.2

BERYL SOIL

Location: 55°46'N 120°54'W
W20-178-R19-W6th

NTS: 93P15

Surveyor: TL

Agency: AC, Vancouver, 1982

Identification: BC Soil Survey Report 42

Classification: Brunisolic Gray Luvisol (1978)

Landform and parent material: glaciofluvial sands/lacustrine clay

Drainage: moderately well drained

Slope and aspect: 3% S

Elevation: 695 m

Additional notes: Bm horizon has faint, fine mottles along root channels

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L	3-2.5	grass and leaf litter			
FH	2.5-0	semidecomposed litter			
Ae1	0-2	grayish brown (10YR 5/2 m)	silt loam	weak, fine platy	friable
Bm	2-9	dark brown (10YR 4/3 m)	silt loam	very weak, coarse platy	very friable
Ae2	9-14	grayish brown (10YR 5/2 m)	silt loam	very weak, fine platy	very friable
IIBA	14-24	dark brown (10YR 4/3 m)	silty clay	strong, medium subangular blocky	very firm, very sticky, plastic
IIBt	24-44	very dark grayish brown (10YR 3/2 m)	clay	very weak, medium columnar breaking to subangular blocky	firm, very sticky, plastic
IIBCca	44-70	dark grayish brown (10YR 3/2 m)	clay	moderate, medium angular blocky	firm, very sticky, plastic
IICk	70+	very dark grayish brown (10YR 3/2 m)	silty clay	fine pseudo-blocky	sticky, very plastic

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			Oxalate (%)		Pyrophos. (%)		P1 (ppm)	Electrical cond. (mS/cm)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al	Fe	Al		
Bm	4.9	0.4	0.0	11.0	5.3	2.7	0.6	0.1	0.0	12	79	9	0.3	0.1	0.1	0.1	3	
Ae2	4.8	0.3	0.0	9.5	4.4	2.6	0.5	0.0	0.0	17	75	8	0.2	0.1	0.1	0.1	3	
IIBA	4.9	0.9	0.1	9.6	16.2	11.7	2.7	0.2	0.0	6	41	53					5	
IIBt	6.8				25.0	22.2	4.0	0.2	0.1	3	28	69						
IIBCca	7.6				22.3	39.3	3.6	0.2	0.1	3	33	64						
IICk	7.7				9.7	34.1	3.4	0.1	0.0	1	56	43						0.3

BOUNDARY SOIL

Location: 56°29'N 120°05'W
NTS: 94A8
Surveyor: TL
Agency: AC, Vancouver, 1968

Identification: BC Soil Survey Report 42
Classification: Orthic Gray Luvisol (1978)
Landform and parent material: plateau upland; modified residual shales

Drainage: moderately well to imperfectly drained
Slope and aspect: 1.5%
Elevation: 780 m
Additional notes: bedrock is Smoky River formation

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	2.5–5	leaves, twigs, grass litter				
F	5–0	fibrous root mat, semidecomposed				
AH	0–4	gray (10YR 5/1 d)	silty clay loam	strong, medium granular	soft, firm, slightly sticky, plastic	many, fine
Ae	4–13	light gray (10YR 7/2 d)	silt loam	moderate to fine angular blocky	soft, very friable, plastic	common, fine
AB	13–20	gray brown (10YR 5/2 d)	silty clay loam	strong, medium angular blocky	slightly hard, firm, slightly sticky, plastic	common, fine
Bt	20–37	dark gray (10YR 5/1–4/1 d)	clay	moderate, coarse angular blocky	hard, very firm, sticky, plastic	common
BC	37–60	very dark gray and brown (10YR 3/1 & 4/3 d)	clay	massive, breaking to fine granular	slightly hard, friable, sticky, plastic	few, medium
C1	60–95	gray and yellowish brown (10YR 5/1 & 5/6 m)	silty clay	massive, breaking to pseudo-blocky	friable, sticky, very plastic	very few

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)				Oxalate (%)		Bulk density	P1 (ppm)	S (ppm)
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	Fe	Al			
Ah	5.1	5.7	0.5	38.4	19.9	3.0	1.7	0.1	12	53	35	10	1.1	0.5		54	700
Ae	5.0	0.8	0.1	13.9	7.2	1.4	0.6	0.1	15	61	24	9	0.6	0.1	1.7	9	281
AB	5.0	0.7	0.1	16.1	9.8	2.0	0.5	0.1	11	57	32	15	0.8	0.2		6	331
Bt	4.5	0.9	0.1	24.6	14.2	3.1	0.4	0.1	8	37	55	27	1.0	0.2		4	593
BC	4.1			24.6	12.4	2.7	0.4	0.1	14	32	54	23	1.1	0.2	1.6		475
C1	4.2			20.5	9.3	2.2	0.3	0.3	13	44	43	18	0.9	0.2			1226
C2	4.1			16.3	9.8	2.3	0.1	0.5	10	50	40	14	1.3	0.1	1.7		3606

BRANHAM SOIL

Location: 56°30'N 121°55'W	NTS: 94A5	Surveyor: WW	Agency: AC, Vancouver, 1973
Identification: AC Res. Stn. Report 273	Classification: Orthic Eutric Brunisol (1978)		Landform and parent material: medium-textured fluvial terraces
Drainage: well drained	Slope and aspect: gently undulating	Elevation: 650 m	Additional notes: gravelly phases of Branham soils are common

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	4-0	leaf litter and roots			
Bm	0-15	yellowish brown (10YR 5/4 d)	silt loam	weak, medium angular blocky	soft, very friable
Ck1	15-45	grayish brown (10YR 5/2 d)	silt loam	weak, coarse pseudo-angular blocky	soft, friable
Ck2	45-75	grayish brown (10YR 5/2 d)	silt loam	weakly stratified	soft, very friable

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)				Particle-size distribution (%)				Bulk density	S (ppm)	Mn (ppm)	Cu (ppm)
				CEC	Ca	Mg	K	Sand	Silt	Total clay	Fine clay				
L-H	6.3		1.5	26.4	30.4										
Bm	6.1	2.3	0.1	14.2	3.8	2.1	0.2	27	58	15	7		270	1	7
Ck1	7.5	1.8	0.1	8.9	10.5	2.3	0.0	23	63	14	5	1.3	115	1	1
Ck2	7.7	0.8	0.1	4.6	7.8	1.2	0.0	40	54	6	3		11	1	1

BUICK SOIL

Location: 56°34'N 121°14'W
S25-T87-R21-W6th

NTS: 94A11

Surveyor: AG

Agency: AC, Vancouver, 1982

Identification: BC Soil Survey Report 42

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: till or lacustrotill

Drainage: poorly drained

Slope and aspect: 2% SW

Elevation: 808 m

Additional notes: site is on Beatton River Road 2.5 km from Alaska Hwy; Aeg and Ah2 have numerous fine shotty structures

Vegetation: black spruce, black twinberry, bog cranberry; thick moss cover

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	9-4	moss and living roots				
F	4-0	large roots, twigs, semidecomposed litter				
Ah1	0-5	black (10YR 2/1 m)	heavy clay	strong, fine granular		abundant, medium and fine
Ah2	5-8	dark grayish brown (10YR 4/2 m)	silty clay	strong, fine granular	friable, sticky, plastic	few, fine horizontal
Aeg	8-16	dark grayish brown (10YR 4/2 m) [mottles-common, few, faint (10YR 4/3 m)]	silty clay loam	massive	very firm, slightly sticky, very plastic	few, fine
Btg	16-46	very dark grayish brown (10YR 3/2 m)	silty clay loam	massive to pseudo-blocky	very firm, very sticky, plastic	nil
Cg	46-85+	very dark grayish brown (10YR 3/2 m) [mottles--many, fine, distinct (10YR 4/3 m)]	clay	massive to pseudo-blocky	firm, very sticky, plastic	nil

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			Oxalate (%)		Pyrophos. (%)		P1
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al	Fe	Al	(ppm)
Ah1	4.3	11.5	0.9	13.1	57.2	13.9	6.5	2.0	0.1	2	20	78					
Ah2	4.7	5.8	0.4	13.7	44.5	10.7	5.4	0.9	0.1	3	40	57	1.2	0.4	0.7	0.3	39
Aeg	4.6	1.7	0.2	9.6	15.3	3.7	1.5	0.3	0.1	4	68	28	1.6	0.2	0.6	0.2	27
Btg	4.9				19.1	6.1	2.6	0.4	0.1	6	57	37	1.9	0.2			
C	6.3				20.8	11.8	6.5	0.2	0.1	22	34	44	0.5	0.1			

CENTURION SOIL

Location: 56°30'N 121°55'W

NTS: 94A5

Surveyor: WW

Agency: AC, Vancouver, 1973

Identification: AC Res. Stn. Report 273

Classification: Rego Humic Gleysol, carbonated phase (1978)

Landform and parent material: fluvial terrace

Drainage: poorly drained

Slope and aspect: nil

Elevation: 650 m

Additional notes: the thick peaty Oh horizon is moderately calcareous; the thick Ahgj is strongly calcareous and slightly mottled

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
OH	12-0	very dark brown mat of decomposed organic materials				
Ahgj	0-32	dark gray (10YR 4/1 d)	loam	medium and coarse granular	friable	common, fine
Ckg1	32-52	grayish brown (2.5Y 5/2 d)	loam	fine pseudo-granular	very friable, slightly hard	
Ckg2	52+	grayish brown (2.5Y 5/2 d)	sandy loam	structureless-amorphous	very friable, soft	

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)				Particle-size distribution (%)				Mn	Cu	Zn
				CEC	Ca	Mg	K	Sand	Silt	Total clay	Fine clay	(ppm)	(ppm)	(ppm)
OH	7.3		2.0	232	80	12.5	7.6							
Ahgj	7.4	8.4	0.4	38	21	3.9	0.1	40	46	14	4	18	1	0
Ckg1	7.6	0.7	0.1	7	13	1.4	0.1	52	37	11	6	40	1	1
Ckg2	7.4	0.2	0.0	3	10	1.1	0.1	55	37	8	3	17	1	1

CODESA SOIL

Location: 56°13'N 120°42'W
SW30-T83-R17-W6th

NTS: 94A2

Surveyor: AG

Agency: AC, Vancouver, 1977

Identification: ISSS 78 Site near Baldonnel

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: loamy glaciofluvial veneer over clayey glaciolacustrine

Drainage: moderately well drained

Slope and aspect: 3% S

Elevation: 680 m

Additional notes: Aegj has many fine, distinct mottles; Btjgj has common fine, distinct mottles and few clay bridges; IIIBt has continuous moderately thick clay films on peds; IIIBC has many thick clay films; IIICca is moderately calcareous; IIICsk is weakly calcareous and saline

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	7-5	fresh litter of leaves and twigs				
F-H	5-0	thin, mesic, mull-like humus				
Ah	0-5	dark brown (10YR 3/3 d) and black (10YR 2/1 m)	silt loam	very coarse granular to strong, medium granular	nonsticky, friable, soft, plastic	abundant, fine and medium, horizontal
Aegj	5-24	light gray (2.5Y 7/2 d)	cobbly silt loam	moderate, medium platy to weak, fine granular	slightly sticky, very friable, soft, plastic	few, fine, vertical
Btjgj	24-26	light gray (2.5Y 7/2 d) and olive brown (2.5Y 4/4 m)	cobbly sandy loam	strong, medium subangular blocky, to strong, fine subangular blocky	sticky, hard, firm, plastic	few, fine, horizontal
IIBmgj	26-39	yellow (2.5Y 7.5/2 d) and light olive brown (2.5Y 5/4 m)	gravelly, cobbly sandy loam	weak, fine and medium subangular blocky to single grain	nonsticky, loose, slightly hard, nonplastic	few, fine and medium, vertical
IIIBt	39-75	gray (2.5Y 5.5/2 d) and olive brown (2.5Y 4.5/2 m)	cobbly clay	moderate, coarse columnar to strong, medium angular blocky	sticky, very firm, very hard, very plastic	plentiful, fine and medium, vertical
IIIBC	75-85	gray (2.5Y 5.5/0 d) and dark gray (2.5Y 4/0 m)	cobbly clay loam	very weak, coarse columnar to strong, fine subangular blocky	sticky, very firm, very hard, very plastic	plentiful, fine and medium, vertical
IIICca	85-118	gray (2.5Y 6/0 d) and dark gray (2.5Y 4/1 m)	cobbly clay loam	stratified to moderate, medium to coarse angular pseudo-blocky	sticky, firm, very hard plastic	few, micro, vertical
IIICsk		light brownish gray (2.5Y 6/2 d) and dark grayish brown (2.5Y 4/2 m)	cobbly clay	stratified to moderate, medium angular pseudo-blocky	very sticky, firm, hard, very plastic	very few to few, micro

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Pyrophosphate (%)		Bulk density
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	Fe	Al	
L	5.2	45.0	0.9	49	56.4	38.8	12.3	7.9	0.3							
F-H	6.1	38.7	1.5	26	87.9	86.4	12.6	4.2	0.0							
Ah	5.8	3.0	0.2	13	18.8	17.2	2.2	1.0	0.1	24	58	18	7			
Aegj	5.9	0.6	0.1	11	5.4	4.1	0.9	0.2	0.0	24	68	8	2			1.27
Btjgj	5.2	0.5	0.1	11	7.5	5.1	1.7	0.6	0.0	66	19	15	7			
IIBmgj	5.7	0.3	0.0	15	3.9	2.8	0.9	0.2	0.0	85	9	6	4	0.28	0.36	
IIIBt	5.5	1.0	0.1	12	20.1	15.4	7.4	0.7	0.5	14	41	45	24			1.43
IIIBC	6.5				17.3	16.0	6.8	0.5	0.3	21	40	39	19			
IIICca	7.1									17	45	38	15			
IIICsk	7.3									16	43	41	18			1.65

COLDSTREAM SOIL

Location: 54°52'N 120°45'W
T79-R18-W6th

NTS: 94A10

Surveyor: TL

Agency: AC, Vancouver, 1965

Identification: BC Soil Survey Report 8

Classification: Orthic Luvic Gleysol (1978)

Landform and parent material: clayey glaciolacustrine

Drainage: poorly drained

Slope and aspect: nil

Elevation: 700 m

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	8-0	dark brown litter, mainly sedge and grass remains			
Ah	0-2.5	gray (10YR 5/1 d)	silt loam	moderate, fine granular	friable
Aeg	2.5-8	light gray (10YR 6/1 d)	very fine sandy loam	moderate, medium platy	friable
BAg	8-23	gray (10YR 5/1 d) with dark brown (10YR 3/3 m) mottles	silty clay	moderate, medium coarse blocky	very sticky
Btg	23-26	gray (10YR 6/1 d) with dark grayish brown (10YR 3/2 m) mottles	silty clay	moderate, medium fine blocky	hard, firm
Ck	36+	gray (10YR 5/1 d)	silty clay	weak, coarse pseudo-blocky	very hard, very firm

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					P1 (ppm)
				CEC	Ca	Mg	K	Na	
Ah	6.0	6.1	0.6	37.5	20.2	3.1	2.1	0.2	640
Aeg	6.1	2.4	0.3	26.9	15.5	3.3	1.1	0.2	260
BAg	5.7	1.5	0.2	29.4	15.1	6.9	1.1	0.2	200
Btg	6.3	1.4	0.2	29.7	17.1	8.2	0.6	0.6	190
Ck	8.0	4.6	0.1	29.7	31.6	7.8	0.4	0.4	140

DAVIS SOIL

Location: 55°52'N 119°27'W NW10-T68-R5-W6th	NTS: 82L	Surveyor: AT	Agency: ARC, Edmonton, 1980
Identification: Alberta Res. Council Bull. 39	Classification: Orthic Gray Luvisol (1978)		Landform and parent material: glaciofluvial silts
Drainage: well drained	Slope and aspect: gently undulating	Elevation: 670 m	

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-H	5-0	semidecomposed deciduous leaves, roots, shrubs, and grasses				abundant, medium and coarse
Ae	0-17	brownish yellow (10YR 6/6 m)	silt loam	weak, fine and medium platy	very friable	abundant, fine
AB	17-24	yellowish brown (10YR 5/4 m)	silt loam	moderate, medium subangular blocky	very friable to friable	plentiful, medium and fine
Bt	24-40	dark yellowish brown (10YR 4/4 m)	silt loam	moderate, fine subangular blocky	friable	plentiful, fine and very fine
BCk	40-49	dark yellowish brown (10YR 4/4 m)	silt loam	pseudo-platy or stratified	friable	few, very fine
Cca	49+	brown (10YR 5/3 m)	silt loam	stratified	very friable	very few, fine and medium

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)		
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay
L-H	6.2	32.1	1.4	24	95.4	72.7	8.2	3.1	8.2			
Ae	5.5	0.4	0.0	14	5.8	3.3	0.5	0.2	0.5	15	77	8
AB	6.9	0.6	0.0	15	10.2	5.2	1.3	0.2	1.3	10	72	18
Bt	6.0	0.7	0.1	14	17.7	12.5	2.9	0.2	2.9	12	64	24
BCk	7.4									18	60	22
Cca	8.4									16	71	13

DEMMITT SOIL

Location: NE26-T74-R13-W6th

NTS: 83M

Surveyor: WO

Agency: ARC, Edmonton, 1958

Identification: Alberta Soil Survey Report 20

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: loamy till

Drainage: moderately well drained

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
F-H	2.5-0	dark grayish brown (10YR 4/2 m) semidecomposed leaf litter			
Ah	0-2.5	dark grayish brown (10YR 4/2 m)	loam	weak, platy	friable
Ae1	2.5-7	light gray (10YR 7/2 m)	very fine sandy loam	fine, platy	friable
Ae2	7-14	pale brown (10YR 6/3 m)	very fine sandy loam	fine, platy	friable
AB	14-19	brown (10YR 5/3 m)	loam	weak, platy-subangular blocky	friable
Bt1	19-34	yellowish brown (10YR 5/4 m)	clay loam	fine-medium, subangular blocky	firm
Bt2	34-59	grayish brown to brown (10YR 5/2-5/3 m)	clay loam	subangular blocky-angular blocky	firm
BC1	59-74	to dark grayish brown (10YR 5/2-4/2 m)	clay loam	subangular blocky-angular blocky	firm
BC2	74-105	grayish brown to dark grayish brown (10YR 5/2-4/2 m)	clay loam	angular blocky	firm
Bca	105-120	similar to above, with lime accumulations in pockets			
C	120+	brown (10YR 5/3 m)	sandy clay loam		

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)		
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay
L-H	6.2	24.8	1.1	23.4	42.9	31.3	3.0	2.6	0.6			
Ae	6.3	0.7	0.1	13.6	6.7	3.8	0.7	0.3	0.3	26	67	7
AB	5.9	0.2	0.0	11.7	7.2	4.5	0.9	0.2	0.2	28	60	12
Bt	5.4	0.6	0.0	16.3	22.9	16.4	3.2	0.3	0.2	38	22	40
BC	5.5	0.5	0.0	13.0	26.3	21.3	3.7	0.2	0.2	38	30	32
C	6.6	0.5	0.0	12.0	26.3	21.3	3.7	0.3	0.1	36	31	33

DEVEREAU SOIL

Location: 55°45'N 120°30'W
NTS: 93P15
Surveyor: LF
Agency: AC, Vancouver, 1965

Identification: BC Soil Survey Report 8
Classification: Dark Gray Luvisol (1978)
Landform and parent material: glaciolacustrine; "humpie" topography

Drainage: well drained
Slope and aspect: level to gently sloping
Elevation: 700 m

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	2.5-0	dark brown leaf litter			
Ahe	0.-10	dark brown (10YR 3/3 m)	silty clay loam	moderate, medium to fine granular	friable
Ae	10-18	light gray (10YR 7/2 d)	silty clay loam	moderate, medium platy to subangular blocky	firm
BA	18-28	light brownish gray (10YR 6/2 d)	silty clay	moderate, coarse subangular blocky	very firm
Bt	28-48	very dark gray (10YR 3/1 m)	silty clay	weak, coarse prismatic to medium blocky and subangular blocky	very hard
BC	48-64	very dark gray (10YR 3/1 m)	silty clay	moderate, coarse blocky	friable
Ck	64+	dark gray	silty clay loam (stratified)		

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)				
					CEC	Ca	Mg	K	Na
Ahe	6.3	4.3	0.4	11	28.5	15.6	3.3	1.0	0.1
Ae	6.3	0.9	0.1	9	14.8	7.7	2.2	0.4	0.1
BA	5.4	1.1	0.2	5	26.9	12.8	4.4	0.4	0.1
Bt	6.1	1.1	0.2	5	34.8	20.1	6.5	0.3	0.2
Ck	8.3								

DICKEBUSCH SOIL

Location: 55°38'N 121°34'W	NTS: 93P12	Surveyor: TV	Agency: RAB, Victoria, 1976
Identification: NE Coal Study	Classification: Brunisolic Gray Luvisol (1978)		Landform and parent material: clayey glaciolacustrine blanket
Drainage: moderately well drained	Slope and aspect: 3% SW	Elevation: 685 m	Additional notes: slightly stony

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F-H	12-0					abundant, medium
Ae	0-9	brown (10YR 5/3 m)	sandy loam	moderate, medium platy	friable	plentiful, medium
Bm	9-26	yellowish brown (10YR 5/4 m)	silt loam	weak-moderate, medium subangular blocky	friable	plentiful, medium
Bt	26-42	grayish brown (10YR 5/2 m)	silty clay	moderate-strong, medium subangular blocky	very firm	plentiful, micro
BCk	42-50		silty clay	weak, medium subangular blocky	friable	few, fine
Ck	50-74	dark grayish brown (2.5Y 4/2 m)	silty clay	massive	firm	few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)			Pyrophosphate (%)	
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al
Ae	6.2	0.8	0.1	6.8	5.4	0.9	0.1	0.0					
Bm	6.6	0.4	0.1		3.5	1.0	0.1	0.0	24	60	16	0.1	0.1
Bt	6.9	0.7	0.1	14.9	10.1	3.9	0.4	0.0	1	47	52	0.2	0.1
BCk	7.3	0.9	0.1	13.3	12.8	4.0	0.3	0.1	1	49	50	0.1	0.1
Ck	7.6	0.7	0.1		22.8	3.2	0.2	0.0	1	59	40		

DONNELLY SOIL

Location: 54°57'N 119°04'W
SW7-T69-R11-W6th

NTS: 83L

Surveyor: AT

Agency: ARC, Edmonton, 1980

Identification: Alberta Res. Council
Bull. 39

Classification: Gleyed Solonetzic Gray Luvisol (1978)

Landform and parent material:
medium-textured glaciolacustrine

Drainage: moderately well to imperfectly drained

Vegetation: trembling aspen, willows, balsam poplar, rose, grasses

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-H	5-0	semidecomposed grass, leaves, roots				
Ahe	0-8	dark grayish brown (10YR 4/2 m)	silt loam	weak to moderate, fine platy	friable	abundant, fine
Ae	8-25	light brownish gray (10YR 6/2 m)	loam	moderate to strong, coarse platy	friable	few, fine
ABgj	25-38	yellowish brown (10YR 5/6 m)	clay loam	moderate, medium subangular blocky	firm	few, fine
Btnjgj	38-70	dark yellowish brown (10YR 4/4 m)	clay	strong, medium to coarse subangular blocky	firm to very firm	very few, fine
Csagj	70-105	dark grayish brown (10YR 4/2 m)	clay loam	fine to moderate, pseudo-angular blocky	friable to firm	no roots
Cskgj	105+	brownish yellow (10YR 6/6 m)	clay loam	stratified	friable to firm	no roots

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Electrical cond. (mS/cm)	Soluble salts (meq/L)			
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay		Ca	Mg	K	Na
L-H	5.8				56.8	16.2	8.2	1.3	0.1									
Ahe	5.7	2.8	0.2	16	17.3	3.9	3.2	0.5	0.1	26	53	21	7					
Ae	5.5	0.5	0.0	13	7.9	1.1	1.7	0.1	0.0	35	45	20	5					
ABgj	5.0	0.6	0.1	11	15.8	2.7	4.7	0.2	0.0	34	36	30	13					
Btnjgj	5.5	0.9	0.1	18	24.0	7.0	8.4	0.2	0.0	28	31	41	24					
Csagj	7.5									34	30	36	18	4.1	28.1	34.3	0.0	13.0
Cskgj	7.7									30	34	36	17	2.8	32.2	6.5	0.1	1.1

EAGLESHAM SOIL

Location: 54°44'N 119°39'W NW19-T66-R11-W6th	NTS: 82L	Surveyor: AT	Agency: ARC, Edmonton, 1980
Identification: Alberta Res. Council Bull. 39	Classification: Terric Fibric Mesisol (1978)		Landform and parent material: fen peat
Drainage: very poorly drained	Slope and aspect: depression	Elevation: 910 m	

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Structure	Roots
Of1	0-10	brown (10YR 5/3 m)	strongly layered; compact; nonwoody	abundant, fine and coarse
Om1	10-20	very dark grayish brown (10YR 3/2 m)	moderately layered; compact; nonwoody	abundant, fine and medium
Of2	20-48	dark brown (7.5YR 4/4 m)	weakly layered; compact; nonwoody	plentiful, fine and medium
Om2	48-60	dark brown (7.5YR 3/2 m)	weakly layered; compact; nonwoody	few, fine and medium
Of3	60-90	dark brown (7.5YR 4/4 m)	strongly layered; very compact; nonwoody	few, fine and medium
Cg	90-102	dark grayish brown (10YR 4/2 m)	silty clay loam; amorphous; very friable	very few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Pyrophosphate color (%)	Fiber (%)		Ash (%)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay		unrubbed	rubbed	
Of1	4.9	30.5	1.5	20	91.4	22.2	7.2	4.0	0.4					10YR 8/2	74	48	38
Om1	5.2	38.4	3.1	12	94.4	22.8	4.8	2.9	0.3					10YR 8/2	77	21	16
Of2	5.1	50.8	3.0	17	91.4	24.5	3.1	0.4	0.2					10YR 7/1	79	52	4
Om2	4.9	47.7	3.1	15	103.2	29.7	3.6	0.3	0.3					10YR 7/1	75	30	5
Of3	5.0	51.0	3.0	17	76.8	19.4	3.1	0.3	0.4					10YR 6/1	93	52	9
Cg	5.1	9.4	0.8	11	39.6	7.5	1.9	1.0	0.0	18	53	29	13				

ESHER SOIL

Location: 55°12'N 119°24'W NE36-T71-R70-W6th	NTS: 83M	Surveyor: AT	Agency: ARC, Edmonton, 1975
Identification: ISSS 78 Tour Site	Classification: Solonetzic Gray Luvisol (1978)		Landform and parent material: clayey lacustrotill and glaciolacustrine
Drainage: moderately well drained	Slope and aspect: 5% SE	Elevation: 732 m	Additional notes: site is on the Research Station, Agric. Can., Beaverlodge, Alta.

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
Ap	0-8	grayish brown (10YR 5/2)	loam	moderate, fine granular	very friable, slightly hard	abundant, very fine
Ae	8-14	pale brown (10YR 6/3 d)	clay loam	strong, medium platy	very friable, slightly hard	plentiful, very fine
AB	14-19	pale brown (10YR 6/3 d)	clay	moderate, medium subangular blocky	firm, hard	few, very fine
Btnj	19-39	dark grayish brown (10YR 4/2 d)	heavy clay	weak, medium prismatic to subangular blocky	very firm, very hard	very few, very fine
Bt	39-80	very dark gray (10YR 3/1 m)	heavy clay	weak, medium prismatic to subangular blocky	very firm, very hard	very few, very fine
Cks	80-115	dark gray (10YR 4/1 m)	clay	structureless-massive	friable, very hard	very few, very fine
IICks	115-175	dark grayish brown (2.5Y 4/2 m)	loam	structureless-massive	friable, slightly hard	

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Bulk density
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	
Ap	5.9	3.1	0.3	10	21.0	16.2	3.8	0.5	0.0	29	44	27	12	1.25
Ae	5.8	1.0	0.1	10	17.2	14.0	4.5	0.3	0.0	29	37	34	16	
AB	5.8	0.9	0.1	10	21.7	17.0	7.2	0.3	0.1	25	34	41	25	1.45
Btnj	5.7	1.1	0.1	14	29.1	24.0	10.0	0.5	0.4	10	23	67	38	1.49
Bt	6.8	1.1	0.1	14	29.1	26.0	11.5	0.5	0.3	11	23	66	34	1.66
Cks	7.7									18	30	52	22	
IICks	7.8									34	41	25	10	1.76

FALHER SOIL

Location: SW29-T83-R12-W6th

NTS: 84D

Surveyor: WO

Agency: ARC, Edmonton, 1965

Identification: Alberta Soil Survey Report 23

Classification: Dark Gray Luvisol (1978)

Landform and parent material: clayey glaciolacustrine blanket

Drainage: moderately well drained

Slope and aspect: level to undulating

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	2.5-0	dark brown (10YR 3/3 m) leaf mat			
Ahe	0-8	dark grayish brown (10YR 4/2 m)	clay loam	weak granular	friable
Ae	8-13	pale brown (10YR 6/3 m)	silty clay loam	platy	friable
AB	13-21	grayish brown (10YR 5/2 m)	silty clay	subangular blocky	firm
Btnj1	21-34	dark grayish brown (10YR 4/2 m)	clay	weak columnar	very firm
Btnj2	34-47	very dark grayish brown (10YR 3/2 m)	clay	strong blocky	very firm
BC	47-63	dark gray (10YR 4/1 m)	clay	blocky	very firm
Csaca	63-68	dark gray (10YR 4/1 m)	clay		
Csk	68+	dark gray (10YR 4/1 m)	clay		

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Electrical cond. (mS/cm)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	
Ahe	6.5	4.5	0.3	15	41.9	29.7	5.0	2.1	0.0	27	31	42	13	
Ae	6.2	0.8	0.1	11	21.7	13.9	3.7	0.9	0.0	20	51	29	9	
AB	6.1	1.3	0.1	13	23.4	14.7	4.4	0.7	0.0	14	46	40	17	
Btnj1	5.1	1.2	0.1	15	37.6	20.3	9.8	0.8	0.8	2	8	90	49	
BC	6.8	1.4	0.1	16						1	13	86	39	
Cak	7.4	1.4	0.1	16						8	15	77	26	
Cak (@ 150 cm)														3.8

FELLERS SOIL

Location: 55°35'N 120°35'W
NTS: 93P10
Surveyor: LF
Agency: AC, Vancouver, 1965

Identification: BC Soil Survey Report 8
Classification: Brunisolic Gray Luvisol (1978)
Landform and parent material: loamy morainal

Drainage: moderately well drained
Slope and aspect: steep slopes
Elevation: 1000 m

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	3-0	litter of needles and twigs			
Ae1	0-8	light gray (10YR 7/1 d)	silt loam	moderate, fine platy	loose, friable
Bm	8-18	light brownish gray (10YR 6/2 d)	clay loam	strong, fine subangular blocky	firm, slightly hard
Ae2	18-23	light brownish gray (10YR 6/2 d)	clay	strong, fine and medium subangular blocky	slightly hard, firm
Bt	23-76	gray (10YR 6/1 d)	clay	strong, medium blocky	very hard, very firm
BC	76-99	grayish brown (10YR 5/2 d)	clay	moderate, medium blocky	
C	@135	grayish brown with few faint, yellowish brown mottles	clay	numerous sandstone fragments	

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)		
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay
Ae1	5.8	0.3	0.1	3	13.2	6.1	2.5	0.3	0.1	34	54	12
Bm	4.5	0.6	0.1	6	28.0	7.0	7.0	0.3	0.1	21	38	41
Ae2	4.5	0.5	0.1	5	31.0	8.1	8.6	0.3	0.2	15	36	49
Bt	4.2	0.3	0.1	4	35.0	11.4	11.5	0.3	0.3	15	37	48
BC	5.1	0.3		3	32.6	14.4	10.1	0.3	0.3	17	41	42
C	6.8				29.3	15.0	10.9	0.3	0.3	17	41	42

GOOSE SOIL

Location: SE9-T84-R10-W6th	NTS: 84D	Surveyor: WO	Agency: ARC, Edmonton, 1965
Identification: Alberta Soil Survey Report 23	Classification: Orthic Humic Gleysol (1978)		Landform and parent material: glaciolacustrine clay
Drainage: poorly drained	Slope and aspect: depressional		

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	5-0	dark brown (10YR 3/3 m), organic mat, may be peaty			
Ah	0-15	very dark gray (10YR 3/1 m)	silty clay loam	granular	friable
ABg	15-25	dark gray (10YR 4/1 m) with yellowish gray mottles (10YR 5/4 m)	silty clay	fine subangular blocky	firm, plastic, very hard
Bg	25-45	dark gray (7.5YR 4/0 m) with brown (7.5YR 4/4 m) mottles	clay	massive	
BCg	45-55	gray (7.5YR 5/0 m) with brown (7.5YR 4/4 m) mottles	clay	massive	plastic, hard
Ckg	[illegible]60	dark gray (7.5YR 4/0 m)	clay	massive	

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay
L-H	6.7												
Ah	6.7	8.1	0.6	8.1	37.9	26.5	7.2	1.9	0.0	5	65	30	0
Bg	6.4	0.9	0.8	0.9	21.9	13.1	6.1	0.9	0.0	7	38	55	20
BCg	6.7	0.9	0.8	0.9	23.4	13.6	8.2	0.9	0.0	4	31	65	33
Ckg	7.2	0.9	0.8	0.9	27.9	17.9	9.2	0.6	0.3	2	18	80	34

GROUNDBIRCH SOIL

Location: 56°46'N 121°08'W
Lot 2281, S side of Hwy 97

NTS: 93P14

Surveyor: TL

Agency: AC, Vancouver, 1982

Identification: BC Soil Survey Report 42

Classification: Eluviated Eutric Brunisol (1978)

Landform and parent material: glaciofluvial sands

Drainage: well drained

Slope and aspect: 5% S

Elevation: 750 m

Additional notes: carbonated at 120+ cm in lenses and pockets; 3 distinct, fine, wavy Btj bands in BC horizon

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-F	3-0	twigs, leaves, roots			
Ae	0-5	pinkish gray (7.5YR 6/2 d), dark brown (7.5YR 4/2 m)	loamy sand	weak, medium subangular blocky	friable
Bm	5-30	brown (7.5YR 5/4 d), dark brown (7.5YR 4/4 m)	sandy loam	weak, medium subangular blocky	friable
BC	30-110	olive brown (2.5Y 4/4 m)	loamy sand	single grain	loose
(Btj)	0.5-1 cm thick	brown (7.5YR 5/4 m), dark brown (10YR 4/3 m)	sandy loam	subangular blocky	very firm, slightly sticky
Cca	110+	grayish brown (2.5Y 5/2 d), dark grayish brown (2.5Y 4/2 m)	loamy sand	single grain	loose

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			Oxalate (%)		Pyrophos. (%)		P1 (ppm)	Electrical cond. (mS/cm)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al	Fe	Al		
Ae	6.0	0.4	0.0	15.2	3.4	2.1	0.4	0.1	0.0	73	25	2					29	
Bm	4.6	0.2	0.0	12.1	4.0	0.9	0.4	0.1	0.0	75	17	8	0.4	0.1	0.2	0.1	123	
BC	5.2				4.7	2.6	0.4	0.1	0.0	83	8	9						
Cca	6.3									86	7	7						0.3

HAZELMERE SOIL

Location: N10-T83-R3-W6th

NTS: 84D

Surveyor: WO

Agency: ARC, Edmonton, 1965

Identification: Alberta Soil Survey Report 23

Classification: Solonetzic Gray Luvisol (1978)

Landform and parent material: lacustrotill; long uniform slopes

Drainage: moderately well drained

Slope and aspect: gently rolling

Additional notes: similar to Donnelly soils but PM of Hazelmere soils is more gravelly and more variable in texture

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	2.5-0	dark brown (10YR 3/3 m) leaf litter			
Ahe	0-2.5	dark grayish brown (10YR 4/2 m)	silt loam	weak, granular	friable
Ae	2.5-8	light brownish gray (10YR 6/2 m)	silt loam	platy	friable
AB	8-15	grayish brown (10YR 5/2 m)	silt loam	subangular blocky	firm
Btnj1	15-28	dark grayish brown (10YR 4/2 m)	clay	weak columnar	very firm
Btnj2	28-46	dark brown (10YR 3/3 m)	clay	strong blocky	very firm
BC	46-66	very dark grayish brown (10YR 3/2 m)	clay loam	subangular blocky	firm
Ccasa	@66	very dark grayish brown (2.5Y 3/2 m)	gravelly sandy clay	loam strata of variable thickness	

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Electrical cond. (mS/cm)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	
L-H	6.0	3.1	0.3	9	31.4	24.8	1.3	1.3	0.3					
Ae	5.8	0.7	0.1	11	9.7	6.0	1.5	0.3	0.3	26	61	13	3	
AB	5.2	0.5	0.1	8	11.0	4.9	3.0	0.2	0.3	19	58	23	9	
Btnj1	4.9	0.7	0.1	11	21.0	8.0	8.0	0.2	0.6	15	42	43	26	
Btnj2	5.2	0.8	0.1	13	24.5	11.0	9.6	0.2	0.7	17	41	42	25	
BC	6.7	0.8	0.1	13	21.3	10.2	10.0	0.2	0.6	20	41	39	22	
Ccasa	7.4													
Csk @ 150 cm														4.5

HORSESHOE SOIL

Location: 55°20'N 121°20'W

NTS: 93P6

Surveyor: TV

Agency: RAB, Victoria, 1976

Identification: NE Coal Study

Classification: Eluviated Dystric Brunisol, lithic phase (1978)

Landform and parent material: sandy colluvial veneer

Drainage: well drained

Slope and aspect: 10%

Elevation: 1323 m

Additional notes: AP BC 2118-1; no seepage; very stony; coarse fragments = 5-10% in profile; bedrock is sandstone at 38 cm

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F-H	5-0					abundant, fine, random
Ae	0-12	pinkish gray (7.5YR 6/2 m)	loam	weak, fine-medium subangular blocky	friable	abundant, fine, random
Bm	12-30	yellowish brown (10YR 5/4 m)	loam	weak, fine subangular blocky	friable	plentiful, fine, random
BC	30-38	yellowish brown (10YR 5/4 m)	sandy loam	weak, medium subangular blocky	friable	plentiful, fine, random
R	38+					

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)			Pyrophosphate (%)	
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al
Ae	3.6	0.7	0.1	7.3	2.2	0.4	0.1	0.0				0.0	0.0
Bm	4.2	0.7	0.1	8.8	1.8	0.4	0.1	0.0				0.2	0.1
BC	4.5	0.7	0.1	7.0	2.3	0.8	0.1	0.0	58	26	16		

JUDAH SOIL

Location: NE23-T83-R6-W6th

NTS: 84D

Surveyor: WO

Agency: ARC, Edmonton, 1965

Identification: Alberta Soil Survey Report 23

Classification: Dark Gray Luvisol (1978)

Landform and parent material: glaciolacustrine, complex "humpie" topography

Drainage: moderately well drained

Slope and aspect: undulating to rolling

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	2.5-0	dark brown leaf litter			
Ahe	0-8	brown (10YR 4/3 m)	silty clay loam	weak, granular	friable
AB	8-18	brown (10YR 4/3 m); aggregates have grayish brown (10YR 5/2 m) coatings	silty clay loam	fine, subangular blocky	firm
Bt	18-43	dark yellowish brown (10YR 3/4 m)	silty clay	blocky	firm
BC	43-66	brown (10YR 4/3 m)	silty clay loam	subangular blocky	firm
Cca	66-69	dark yellowish brown (10YR 4/4 m)	silty clay		
Ck	69+	dark brown (10YR 3/3 m) with yellowish brown (10YR 5/6 m) silt layers			

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay
Ahe	6.8	6.1	0.6	11	40.3	29.4	6.4	2.4	0.4	15	45	40	20
AB	5.5	1.2	0.1	11	22.6	14.9	4.5	0.7	0.2	14	47	39	24
Bt	6.1	0.1	0.1	10	21.8	17.4	3.7	0.4	0.2	14	43	43	29
BC	7.5									13	55	32	16
Cca	7.6									10	39	51	22

KATHLEEN SOIL

Location: SE27-T81-R13-W6th

NTS: 84D

Surveyor: WO

Agency: ARC, Edmonton, 1965

Identification: Alberta Soil Survey Report 23

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: glaciolacustrine clay

Drainage: moderately well drained

Slope and aspect: undulating to gently rolling

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	2.5-0	dark brown (10YR 3/3 m) leaf litter			
Ahe	0-2.5	dark grayish brown (10YR 4/2 m)	silty clay loam	weak, granular	friable
Ae	2.5-8	pale brown (10YR 6/3 m)	silt loam	fine platy	friable
AB	8-18	brown (10YR 5/3 m) and aggregates with light brownish gray coatings	silty clay loam	subangular blocky	firm
Bt	18-43	brown (10YR 4/3 m)	clay	blocky	firm
BC	43-58	brown (10YR 4/3 m)	silty clay	subangular blocky	firm
Cca	58-64	dark yellowish brown (10YR 4/4 m)	silty clay		
Ck	64+	dark brown (10YR 3/3 m) with yellowish brown (10YR 5/6 m) silt laminae	silty clay		

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay
L-H	7.5	6.8	0.5	14									
Ae	6.4	0.6	0.1	11	11.0	7.4	1.7	0.2	0.1	5	44	51	18
AB	5.2	0.7	0.1	9	17.2	10.3	2.9	0.3	0.2	4	35	61	29
Bt	4.9	0.8	0.1	9	31.1	17.7	6.8	0.3	0.3	3	23	74	40
BC	6.1	1.0	0.1	9	34.1	23.9	7.5	0.3	0.3	3	23	74	31
Cca	7.8	1.2	0.1	13						7	43	50	19

KENZIE SOIL

Location: 54°59'N 118°53'W

NTS: 82L

Surveyor: AT

Agency: ARC, Edmonton, 1980

Identification: Alberta Res. Council Bull. 39

Classification: Terric Mesic Fibrisol (1978)

Landform and parent material: moss peat bog

Drainage: very poorly drained

Slope and aspect: level

Elevation: 670 m

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Roots
Of1	0-30	reddish brown (5YR 4/4 m)		weakly layered, spongy, non woody	abundant, medium
Of2	30-68	dusky red (2.5Y 3/2 m) and dark reddish brown (2.5Y 3/4 m)		moderately-strongly layered, compact, moderately woody	plentiful, medium
Om	68-93	yellowish red (5YR 5/6 m) and dark reddish brown (5YR 3/2 m)	silt loam	very weakly layered, compact, slightly woody	few, fine
Cg	93-103	gray (5YR 5/1 m); few fine, distinct mottles (10YR 5/6 m)	silty clay loam		very few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Pyrophosphate color (%)	Fiber (%)		Ash
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay		unrubbed	rubbed	(%)
Of1	3.6	42.4	0.6	68	182.8	16.3	11.8	1.1	0.4					10YR 7/1	92	82	2
Of2	4.1	40.4	0.6	62	202.3	35.0	17.8	0.3	0.0						92	80	
Om	5.2	45.7	1.0	46	212.0	67.2	28.2	0.1	0.3						72	31	13
Cg	5.9				19.2	7.9	4.4	0.6	0.1	10	62	28	1				

LA PRISE SOIL

Location: 57°06'N 121°24'W
NTS: 94H3
Surveyor: TL
Agency: AC, Vancouver, 1968

Identification: BC Soil Survey Report 19
Classification: Gleyed Gray Luvisol (1978)
Landform and parent material: varved glaciolacustrine clay

Drainage: imperfectly drained
Slope and aspect: 3% N
Elevation: 760 m
Additional notes: stop No. 104G; AP BC 5268-079 on Nig Creek Farms road; mottles in Aegj are common, fine, distinct; in BAgj many, medium, prominent; in Btgj many, fine, distinct

Vegetation: trembling aspen, willows, blueberry, bunchberry, grasses

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	3.5-2.5	leaves and twigs				
F	2.5-0	fibrous mat of roots and leaves				
Ahe	0-2	very pale brown (10YR 7/3 d)	loam	strong, fine granular	firm, slightly plastic	medium and fine
Aegj	2-7	white (10YR 8/2 d)	silty clay loam	weak, coarse platy	sticky, plastic	medium and fine
BAgj	7-22	light gray (10YR 7/2 d)	silty clay	strong, medium angular blocky	firm, sticky, very plastic	few, fine
Btgj	22-37	light brownish gray (10YR 6/2 d)	silty clay	moderate, fine angular blocky	firm, sticky, very plastic	few, fine
CB	37-60	grayish brown to dark grayish brown (10YR 5/2 - 4/2 d)	clay	strong, fine angular blocky	firm, sticky, very plastic	very few
Ck	60-120	grayish brown and pale brown (10YR 5/2 & 6/3 d)	silty clay	strong, fine pseudo-blocky	firm, plastic	nil

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)				Oxalate (%)		Bulk density	P1 (ppm)	S (ppm)
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	Fe	Al			
Aegj	4.5	1.1	0.1	14.6	5.5	1.9	0.4	0.0	12	53	35	9	0.4	0.1	1.78	1	121
BAgj	4.4	0.8	0.1	21.4	10.2	3.4	0.5	0.1	5	43	52	20	0.5	0.2		1	93
Btgj	4.7	0.7	0.1	25.3	12.0	3.7	0.5	0.1	4	42	54	22	0.5	0.5	1.73		97
CB	6.4	0.8		26.2	20.0	4.6	0.3	0.1	21	35	44	21	0.4	0.4	1.68		
Ck	7.7			18.7	28.6	3.4	0.2	0.1	14	41	45	17	0.2	0.1			336

LODGE SOIL

Location: 54°55'N 119°12'W
SE31-T68-R8-W6th

NTS: 83L

Surveyor: AT

Agency: ARC, Edmonton, 1980

Identification: Alberta Res. Council
Bull. 39

Classification: Brunisolic Gray Luvisol (1978)

Landform and parent material:
glaciofluvial or eolian sands/
silty materials

Drainage: well drained

Slope and aspect: undulating

Elevation: 740 m

Additional notes: Lodge 8 soil unit in the Wapiti map area

Vegetation: trembling aspen, willows, rose, raspberry, bunchberry, grasses

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-H	8-0	semidecomposed leaf layer, grass, and roots				abundant, coarse and medium
Ae1	0-8	pinkish gray (7.5YR 7/2 m)	very fine sandy loam	single grain	very friable	plentiful, fine and medium
Bm	8-18	strong brown (7.5YR 5/6 m)	very fine sandy loam	single grain	very friable	plentiful, fine
Ae2	18-28	yellowish brown (10YR 5/4 m)	very fine sandy loam	single grain	very friable	plentiful, fine
IIBt	28-48	yellowish brown (10YR 5/6 m)	silty clay loam	fine subangular blocky	friable	plentiful, fine and medium
IICk	48-75	yellowish brown (10YR 5/4 m)	silt loam	single grain and weakly stratified	very friable to friable	few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Pyrophosphate (%)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	Fe + Al
Ae1	6.5	0.6	0.0	14	3.7	1.1	0.4	0.0	0.1	70	27	3	1	
Bm	6.2	0.5	0.0	13	3.7	1.1	0.3	0.0	0.1	80	13	7	1	0.2
Ae2	6.4	0.9	0.0	22	5.2	1.7	0.5	0.0	0.0	69	24	7	2	0.1
IIBt	6.8	0.8	0.1	11	17.3	7.7	3.3	0.2	0.0	16	47	37	23	
IICk	8.3									11	72	17	9	

LYNX SOIL

Location: 56°30'N 121°55'W

NTS: 94A5

Surveyor: WW

Agency: AC, Vancouver, 1973

Identification: AC Research Stn. Report 273

Classification: Brunisolic Gray Luvisol (1978)

Landform and parent material: medium-texture glaciofluvial

Drainage: well drained

Slope and aspect: gently undulating

Elevation: 650 m

Additional notes: in some areas the silty sediments appear wind-worked, particulary near the margins of high terraces

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	6-0	dark brown leaf litter			
Bm	0-10	brown (10YR 4/3 d)	silt loam	weak, fine granular	loose, very friable
Ae	10-20	light yellowish brown (10YR 6/3 d)	sandy loam	weak, fine platy to fine granular	loose, very friable
Bt	20-25	yellowish brown (10YR 5/4 d)	silty clay loam	medium and coarse subangular blocky	hard, firm
Btk	25-50	light grayish brown (10YR 6/2 d)	silty clay loam	weak, subangular blocky	loose, friable
Ck	50+	grayish brown (10YR 5/2 d)	silt loam	structureless to amorphous, pseudo-platy	

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)				Particle-size distribution (%)				Mn (ppm)	Cu (ppm)	Zn (ppm)
				CEC	Ca	Mg	K	Sand	Silt	Total clay	Fine clay			
L-H	5.1													
Bm	5.1	1.0	0.1	9.4	2.1	0.6	0.0	41	52	7	2	3	1	3
Ae	5.3	0.4	0.1	5.9	1.4	0.4	0.1	51	43	6	1	60	1	1
Bt	6.2	0.9	0.1	18.3	4.5	2.4	0.2	14	51	35	19	127	3	3
Btk	7.5	0.6	0.1	8.4	12.8	2.2	0.8	1	72	27	9	8	1	0
Ck	7.5	0.6	0.1	4.2	10.8	1.3	0.0	39	55	6	3	17	1	1

MOBERLY SOIL

Location: 55°47'N 121°40'W
NW34-T78-R24-W6th

NTS: 93P13

Surveyor: TL

Agency: AC, Vancouver, 1977

Identification: ISSS 78 Tour Site

Classification: Brunisolic Gray Luvisol (1978)

Landform and parent material: morainal blanket, calcareous till

Drainage: moderately well drained

Slope and aspect: 25% N

Elevation: 750 m

Additional notes: profile description is from A Soils and Land Use Tour of the Peace River Lowland by T. Lord, A. Green, and A. Hennig, 1977 (unpublished)

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F	7-0	dark brown (7.5YR 3/2 d), mixed litter, semidecomposed				abundant, coarse and medium
Ae1	0-5	light gray (10YR 7.5/1 d)	gravelly silt loam	weak to moderate, medium platy to single grain	nonsticky, very friable, soft, plastic	plentiful, very fine
Bm	5-16	very pale brown (10YR 7/4 d)	gravelly silt loam	weak, medium subangular blocky to moderate, medium granular	nonsticky, friable, slightly hard, plastic	plentiful, medium
Ae2	16-55	very pale brown (10YR 7/3 d)	gravelly silt loam	weak, medium platy to moderate, medium subangular blocky	nonsticky, friable, slightly hard, plastic	plentiful, medium
AB	55-63	light gray and brownish yellow (10YR 7/2 and 6/5 d)	gravelly loam	moderate, medium subangular blocky to moderate, medium granular	nonsticky, firm, hard, plastic	plentiful, very fine and medium
Bt	63-82	light gray and yellowish brown (10YR 7/2 and 5/5 d)	cobbly, gravelly loam	moderate to strong, coarse angular blocky to moderate to strong, medium angular blocky	slightly sticky, firm, very hard, plastic	few, very fine and fine
Ck1	82-107	light brownish gray (2.5Y 6/3 d)	cobbly, gravelly sandy loam	moderate, coarse laminated, massive to moderate, medium pseudo-angular blocky	nonsticky, friable, hard, slightly plastic	very few, very fine and fine
Ck2	107-150	light brownish gray (2.5Y 6/3 d)	cobbly, gravelly loam	very weak, medium to coarse laminated massive to moderate, medium pseudo-angular blocky	nonsticky, very friable, slightly hard, slightly plastic	very few, very fine and fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Bulk density
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	
L-F	6.0	39.7	1.5	27	61.7	7.4	8.0	2.4	0.0					
Ae1	5.4	0.8	0.0	21	4.6	4.2	0.6	0.1	0.0	25	72	3	0	1.31
Bm	5.1	0.7	0.1	15	6.1	3.4	0.6	0.1	0.1	21	74	5	2	1.31
Ae2	5.4	0.4	0.0	14	4.1	3.1	0.6	0.1	0.0	41	55	4	1	
AB	6.0	0.4	0.0	14	3.7	3.2	0.7	0.1	0.0	43	51	6	1	
Bt	7.3	0.4	0.0	14	7.8	9.6	2.2	0.1	0.1	48	37	13	9	1.89
Ck1	7.7									59	35	6	2	1.83
Ck2										45	46	9	2	

MURDALE SOIL

Location: 56°22'N 120°50'W SE18-T85-R18-W6th	NTS: 94A7	Surveyor: AG	Agency: AC, Vancouver, 1977
Identification: ISSS 78 Tour Site	Classification: Dark Gray Solod (1978)		Landform and parent material: morainal blanket, clayey till
Drainage: moderately well drained	Slope and aspect: 6% S	Elevation: 747 m	Additional notes: profile description is from A Soils and Land Use Tour of the Peace River Lowland by T. Lord, A. Green, and A. Hennig, 1977 (unpublished)

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	4-2	semidecomposed organic material				
F-H	2-0	very dark grayish brown (10YR 3/2 d)		weak, medium pseudo-granular	very friable	abundant, fine and medium
Ah	0-7	very dark grayish brown (10YR 3/2 d)	cobbly gravelly clay loam	moderate, medium granular to fine granular	very friable, soft, plastic	abundant, fine and medium
Ahe	7-12	very dark grayish brown (10YR 3/2 d)	cobbly gravelly clay loam	moderate, medium coarse granular breaking to strong, fine granular	slightly sticky, very friable, slightly hard, plastic	plentiful, fine
Ae	12-19	very pale brown (10YR 7/3 d)	cobbly gravelly loam	weak, medium platy breaking to strong, fine granular	slightly sticky, very friable, slightly hard, plastic	plentiful, fine
AB1	19-25	pale brown (10YR 6/3 d)	cobbly gravelly clay loam	strong, medium subangular blocky to fine subangular blocky	sticky, friable, hard, plastic	plentiful, fine and medium
AB2	25-29	pale brown (10YR 6/3 d)	cobbly gravelly clay	strong, medium angular blocky to fine angular blocky	sticky, firm, hard, very plastic	plentiful, fine
Bnt1	29-35	light brownish gray (10YR 6/2 d)	cobbly gravelly clay	strong, medium angular blocky to fine angular blocky	sticky, firm, hard, very plastic	plentiful, fine
Bnt2	35-60	very dark gray (10YR 3/1 d)	cobbly gravelly clay	strong, coarse angular blocky to fine angular blocky	sticky, very firm, very hard, very plastic	plentiful, fine
BC	60-84	very dark gray (10YR 3/1 d)	cobbly gravelly clay	weak, medium angular blocky to fine angular blocky	very sticky, very firm, very hard, very plastic	plentiful, fine
Cak1	84-100	light gray (10YR 7/1 d)	cobbly gravelly clay	strong, medium angular blocky to fine pseudo-blocky	very sticky, firm, hard, very plastic	few, fine and medium
Cak2	100-150	very dark gray (10YR 3/1 d)	cobbly gravelly clay	strong, medium angular blocky to fine pseudo-blocky	very sticky, firm, hard, very plastic	very few, fine and medium

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Bulk density
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	
L	6.7	37.8	1.1	35	86.1	39.7	21.5	7.8	0.0					
F-H	6.5	9.6	0.8	12	49.0	28.1	9.3	2.6	0.0					
Ah	6.6	8.1	0.8	9	42.6	26.7	8.9	1.8	0.0	15	50	35	14	0.85
Ahe	5.2	2.7	0.3	9	26.7	9.8	6.7	0.7	0.1	16	52	32	14	1.16
Ae	4.7	0.9	0.4	4	15.3	3.1	3.3	0.2	0.3	21	54	25	7	1.16
AB1	2.8	1.2	0.1	10	22.4	3.8	6.7	0.3	0.6	15	45	40	17	
AB2	4.6	1.4	0.1	11	32.7	4.6	11.5	0.5	2.0	14	33	53	23	
Bnt1	4.6	1.2	0.1	10	35.4	5.4	13.1	0.6	2.4	12	33	55	30	
Bnt2	4.9	1.1	0.1	10	24.3	4.4	13.2	0.5	2.8	15	36	49	23	1.45
BC	6.1				24.5	6.8	16.1	0.5	2.4	16	38	46	20	
Cak1	7.1				19.4	29.8	17.2	0.5	3.0	14	42	44	19	
Cak2	7.3				19.9		17.9	0.8	8.1	6	32	62	21	

NAMPA SOIL

Location: 55°01'N 119°07'W

NTS: 82L

Surveyor: AT

Agency: ARC, Edmonton, 1980

Identification: Alberta Res. Council Bull. 39

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: glaciolacustrine clay

Drainage: moderately well to imperfectly drained

Slope and aspect: gently undulating

Elevation: 730 m

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
Ah	0–5	dark grayish brown (10YR 4/2 m)	silt loam	weak, fine subangular blocky to granular	very friable	fine and medium
Aegj	5–13	light yellowish brown (10YR 6/4 m); common, medium, prominent mottles (10YR 6/8 m)	silt loam	moderate, medium platy	very friable	plentiful, fine
AB	13–18	brown (10YR 5/3 m)	clay	moderate, medium subangular blocky	friable to firm	few to plentiful, fine and medium
Bt	18–43	dark brown to brown (10YR 4/3 m)	clay	weak to moderate, medium subangular blocky	firm	few, fine
Ck	43–118	olive brown (2.5Y 4/4 m)	clay	pseudo-blocky and stratified	friable	few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay
Ah	7.0	7.2	0.5	15	38.1	19.1	5.2	0.6	0.2	18	61	21	11
Aegj	7.1	0.5	0.1	11	7.2	2.3	1.4	0.1	0.1	20	66	14	5
AB	7.1	0.7	0.1	10	10.0	8.1	5.8	0.4	0.1	17	36	47	27
Bt	7.5	0.8	0.1	11	22.0	9.5	6.9	0.3	0.0	26	24	50	29
Ck	7.8									25	25	50	22

NEUMANN SOIL

Location: 55°13'N 121°17'W

NTS: 93P3

Surveyor: KW

Agency: RAB, Kelowna, 1976

Identification: NE Coal Study

Classification: Eluviated Dystric Brunisol (1978)

Landform and parent material: gravelly, loamy glaciofluvial

Drainage: rapidly drained

Slope and aspect: 4% N

Elevation: 945 m

Additional notes: AP BC 2117-75; coarse fragments in Ae = 20%, in C = 95%

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-F	3-0				
Ae	0-10	gray (10YR 5/1 m)	gravelly loam	weak, fine subangular blocky	friable
Bm	10-18	dark yellowish brown (10YR 4/4 m)	gravelly sandy loam	very weak, fine-medium blocky	loose
BC	18-64	olive brown (2.5Y 4/4 m)	gravelly sandy loam	very weak, fine-medium blocky	loose
C	64+	very dark grayish brown (2.5Y 3/2 m)	gravelly loam		

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)			Pyrophosphate (%)		P1 (ppm)	Electrical cond. (mS/cm)
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al		
L-F	3.7	36.3	1.2	69.6	9.8	2.5	2.2	0.1						70	
Ae	3.4	0.8	0.1	5.4	0.5	0.1	0.1	0.0	48	42	10			41	
Bm	4.2	0.6	0.1	5.4	1.1	0.2	0.1	0.0	54	30	16	0.3	0.2	633	
BC	4.4	0.4	0.1	9.3	1.2	0.2	0.1	0.0	56	32	12			194	
C	5.2	0.5	0.1						52	31	17			40	0.12

OETCA SOIL

Location: 55°37'N 121°35'W	NTS: 93P12	Surveyor: TV	Agency: RAB, Victoria, 1976
Identification: NE Coal Study	Classification: Cumulic Regosol (1978)		Landform and parent material: sandy fluvial floodplain
Drainage: moderately well drained	Slope and aspect: 3% N	Elevation: 580 m	Additional notes: flooding is frequent and regular

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	1-0					abundant, medium, oblique
Ck1	0-1	dark grayish brown (2.5Y 4/2 m)	fine sandy loam	single grain	loose	abundant, medium, oblique
FHb	1-3					abundant, medium, oblique
Ahkb	3-15	very dark grayish brown (10YR 3/2 m)	loam	single grain	loose	abundant, medium, oblique
Ck2	15-45	dark grayish brown (2.5Y 4/2 m)	sandy loam	single grain	loose	abundant, fine, oblique
Ck3	45-60	dark grayish brown (2.5Y 4/2 m)	sandy loam	single grain	loose	plentiful, medium, oblique
Ck4	60-70	dark grayish brown (2.5Y 4/2 m)	sandy loam	single grain	loose	abundant, medium, oblique
Ck5	70-100	dark grayish brown (2.5Y 4/2 m)	sandy loam			abundant, medium, oblique

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)			Pyrophosphate (%)	
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al
Ahkb	7.1	4.4	3.0	24.5	23.2	3.9	0.1	0.0	29	48	23	0.2	0.1
Ck2	7.4	1.0	0.1	4.8	11.0	0.9	0.0	0.0	61	24	15	0.1	0.0
Ck3	7.6	1.4	0.1	6.0	14.7	1.3	0.0	0.0	68	23	9	0.1	0.0
Ck5	7.7	1.1		5.5	14.4	1.1	0.0	0.0	56	30	14		

PALSSON SOIL

Location: 55°00'N 121°13'W

NTS: 93P3

Surveyor: KW

Agency: RAB, Kelowna, 1976

Identification: NE Coal Study

Classification: Orthic Regosol, lithic, turbic phase (1978)

Landform and parent material: gravelly sandy colluvial veneer

Drainage: moderately well drained

Slope and aspect: 35% NW

Elevation: 1677 m

Additional notes: particle size > 2 mm; in Ah = 42%, in Cy = 12%

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F-H	2-0					
Ah	0-5	black (10YR 2/1 d)	gravelly clay loam	weak, medium granular	very friable	plentiful, very fine
Cy1	5-13	very dark gray (5Y 3/1 d)	silt loam	weak-moderate, fine pseudo-blocky	friable	few, very fine
Cy2	13-21	black (5Y 2.5/1 d)	gravelly silty clay loam	very weak, fine pseudo-granular	loose	few, very fine
C	21-50	very dark gray (5Y 3/1 d)	gravelly silt loam	moderate, fine pseudo-blocky	firm	
R	50+					

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)			Pyrophosphate (%)	
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al
L-F-H	5.4	7.2	0.4	22.8	15.0	2.2	0.7	0.0					
Ah	4.8	2.0	0.2	10.1	4.6	1.1	0.3	0.0	23	42	35	0.0	0.1
Cy1	4.3	1.2	0.1	7.7	2.3	1.0	0.2	0.0	27	49	24	0.0	0.1
Cy2	4.9	1.3	0.1	9.6	4.6	1.7	0.2	0.0	14	54	32	0.0	0.0
C	3.6	1.2	0.1	9.0	4.3	2.0	0.2	0.0	27	50	23		

PEORIA SOIL

Location: 55°44'N 120°14'W

NTS: 93P16

Surveyor: AG

Agency: AC, Vancouver, 1977

Identification: ISSS 78 Tour Site

Classification: Black Solod (1978)

Landform and parent material: silty glaciofluvial veneer-clayey glaciolacustrine

Drainage: moderately well drained

Slope and aspect: 3% midslope

Elevation: 677 m

Additional notes: profile description is from *A Soils and Land Use Tour of the Peace River Lowland* by T. Lord, A. Green, and A. Hennig, 1977 (unpublished); this Black Solod profile commonly occurs with the more predominant Eluviated Black Peoria soil

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
Ah1	0-9	very dark gray (10YR 3.5/1 d)	loam	very weak, fine to medium platy	slightly sticky, friable, plastic	abundant, very fine and fine
Ah2	9-23	very dark gray (10YR 3/1 d)	silt loam	moderate, coarse angular blocky	nonsticky, friable, slightly plastic	abundant, very fine and fine
Ae	23-29	light brownish gray (10YR 6/2 d)	silt loam	weak to moderate, coarse platy	slightly sticky, friable, plastic	plentiful, very fine and fine
IIAB	29-34	light gray (10YR 6/2 d)	cobbly silty clay loam	weak, fine to medium prismatic	sticky, firm, very hard, very plastic	plentiful, very fine and fine
IIBnt1	34-56	dark gray (10YR 4/1.5 d)	cobbly clay	moderate, coarse prismatic	sticky, very firm, very hard, very plastic	plentiful, very fine and fine
IIBnt2	56-77	yellowish brown (10YR 5/4 d)	cobbly clay	moderate, coarse prismatic	sticky, very firm, extremely hard, very plastic	plentiful, very fine and fine
IICca	77-120	gray (10YR 5.5/1 d)	cobbly heavy clay	weak, coarse pseudo-prismatic (stratified)	sticky, very firm, very hard, very plastic	few, very fine and fine
IICak	120-160	brown (10YR 5/3 d)	silty clay	moderate, coarse pseudo-platy (stratified)	sticky, very firm, very hard, very plastic	very few, very fine and fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Bulk density
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	
Ah1	6.1	4.6	0.4	10	21.8	17.1	3.8	1.0	0.1	30	45	25	10	1.05
Ah2	5.9	7.4	0.7	10	31.5	25.5	4.6	0.4	0.4	20	51	29	11	
Ae	5.5	1.0	0.1	11	6.9	4.2	1.7	0.1	0.2	18	66	16	4	
IIAB	5.3	1.0	0.1	11	14.5	6.3	5.9	0.3	0.5	19	44	37	17	
IIBnt1	5.0	1.0	0.1	13	19.2	8.9	12.5	0.6	1.4	17	33	50	25	
IIBnt2	5.8	1.0	0.1	11	17.6	9.5	13.3	0.6	1.9	15	33	52	23	1.47
IICca	7.4				15.0	58.3	14.0	0.6	2.8	10	28	62	21	
IICak	7.5									8	39	53	23	1.44

PRESTVILLE SOIL

Location: 57°05'N 121°29'W

NTS: 94H3

Surveyor: AG

Agency: AC, Vancouver, 1969

Identification: BC Soil Survey Report 19

Classification: Orthic Humic Gleysol, peaty phase (1978)

Landform and parent material: glaciolacustrine clay

Drainage: poorly drained

Slope and aspect: 4% E

Elevation: 765 m

Additional notes: stop No. 140, AP BC 5268-065 on Nig Creek Farms road; 1.6 km from Beatton River road; water table at 80 cm on July 27; mottles are few, fine, faint in upper Ahg and Bg; the upper 2.5 cm of Ahg are bleached

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L	30-22	lichens, moss, dead leaves				
FH	22-5	black (5YR 2/2 d); semidecomposed (pyrophos. color 10YR 3/4)				
H	5-0	black (2.5Y 2/0 d); decomposed (pyrophos. color 10YR 3/4)				abundant, fine
Ahg	0-12	very dark gray (10YR 3/1 d) and gray (10YR 5/1 d)	silty clay	strong, fine granular (shotty)	hard, firm, sticky, plastic	many, fine
Bg	12-15	gray (2.5Y 6/0 d) plus grayish brown (2.5Y 5/2 d)	clay	strong, fine blocky	firm, sticky, plastic	few, fine
BCg	15-58	gray (N 5/ d)	heavy clay	strong, fine blocky	firm, sticky, plastic	few, fine
Ckg1	58-75	gray (N 5/ d)	heavy clay	strong, fine pseudo-blocky	firm, sticky, plastic	few, fine
Ckg2	75+	gray (N 5/ d) and gray (5Y 5/1 d)		strong, fine pseudo-blocky	firm, sticky, plastic	few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)				Oxalate (%)		Bulk density	P1 (ppm)	S (ppm)	Ash (%)
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	Fe	Al				
FH	5.8	46.3	1.8	226.1	173.8	27.1	0.3	0.6								12		24.8
H	6.0	39.9	1.4	223.1	173.2	26.1	0.1	0.5								13		40.7
Ahg	6.3	2.9	0.4	43.6	34.3	8.0	0.6	0.3	7	48	45	9	0.9	0.4	1.41	4	155	93.6
Bg	6.5	1.1	0.1	29.4	23.4	6.4	0.6	0.2	6	38	58	26	0.5	0.2	1.70	5	129	
BCg	6.8	0.6		28.1	22.3	6.9	0.5	0.2	3	29	68	29	0.3	0.1	1.75			
Ckg1	7.4	0.6		26.3	37.0	6.9	0.5	0.2	3	32	65	27	0.3	0.1	1.67		90	

ROBB SOIL

Location: 54°07'N 119°11'W
NE19-T59-R8-W6th

NTS: 82L

Surveyor: AT

Agency: ARC, Edmonton, 1980

Identification: Alberta Res. Council Bull. 39

Classification: Eluviated Dystric Brunisol (1978)

Landform and parent material: cordilleran till on uplands

Drainage: well drained

Slope and aspect: rolling

Elevation: 1570 m

Additional notes: the Eluviated Dystric Brunisol is commonly associated with the more dominant Eluviated Eutric Brunisols in the map units

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F	3-0	relatively undecomposed litter				abundant, fine and medium
Ae	0-10	brown (10YR 5/3 m)	loam to clay loam	single grain	very friable	few, fine
Bfj	10-22	yellowish brown (10YR 5/6 m)	clay loam	weak, fine subangular blocky	friable	plentiful, fine
Btj	22-40	light yellowish brown (2.5Y 6/4 m)	loam	weak to moderate, fine subangular blocky	friable	plentiful, fine
BC	40-66	light yellowish brown (2.5Y 6/4 m)	loam	weak, fine subangular blocky	friable	few, fine
C	66+	dark grayish brown (10YR 4/2 m)	loam	weak, fine pseudo-blocky	friable	very few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			Pyrophosphate (%)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe + Al
Ae	4.3	1.8	0.1	18	18.8	1.5	0.6	0.3	0.0	38	35	27	
Bfj	4.9	0.9	0.1	14	19.6	1.3	0.6	0.2	0.0	40	30	30	0.8
Btj	4.9	0.3	0.0	11	17.6	4.2	1.4	0.2	0.0	43	31	26	
BC	4.8	0.3	0.0	11	18.1	6.2	1.7	0.2	0.0	42	32	26	
C	5.0		0.0		19.6	12.1	2.3	0.2	0.1	44	30	26	

ROSELAND SOIL

Location: 56°32'N 120°44'W

NTS: 94A10

Surveyor: TL

Agency: AC, Vancouver, 1965

Identification: BC Soil Survey Report 8

Classification: Black Solod (1978)

Landform and parent material: glaciolacustrine clay

Drainage: well drained

Slope and aspect: steeply sloping

Elevation: 700 m

Additional notes: dark coatings occur on ped surfaces in the Bnt horizon (the chemical data were determined on a different pedon)

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
Ah1	0-13	black (10YR 2/1 d)	clay	moderate, coarse prismatic to medium and fine granular	friable
Ah2	13-20	very dark gray (10YR 3/1 m)	clay	similar to Ah1	
BA	20-36	very dark gray (10YR 3/1 m)	clay	strong, coarse blocky	very hard
Bnt	36-61	very dark grayish brown (10YR 3/2 m) outside of peds dark brown	heavy clay	weak, coarse prismatic to coarse blocky	very hard, very plastic
Cs	61-91	very dark gray (10YR 3/1 m)	clay	massive	
C	91+	dark brown (10YR 3/3 m)	clay	massive to coarse pseudo-blocky	

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Electrical cond. (mS/cm)
					CEC	Ca	Mg	K	Na	
Ah	6.2	9.8	0.9	10.8	49.2	23.4	10.8	2.0	0.2	0.1
Ae	5.4	2.7	0.3	9.0	43.7	14.1	14.8	0.8	0.3	0.2
Bn	5.1	1.7	0.2	8.5	42.4	13.0	14.8	0.6	0.5	0.3
Cs	7.4	1.3	0.2	6.5	26.1	23.5	11.6	0.5	0.8	1.2
C	7.6	1.1	0.1	11.0	25.6	23.7	13.2			3.4

SNIPE SOIL

Location: 54°53'N 118°56'W
NE11-T68-R7-W6th

NTS: 82L

Surveyor: AT

Agency: ARC, Edmonton, 1980

Identification: Alberta Res. Council Bull. 39

Classification: Orthic Luvic Gleysol (1978)

Landform and parent material: glaciolacustrine clay

Drainage: poorly drained

Slope and aspect: gently undulating

Elevation: 720 m

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-H	10-0	semidecomposed; deciduous leaves and plant debris				abundant, fine
Ahg	0-5	very dark gray (10YR 3/1 m) with common, medium, distinct mottles (10YR 5/4 m)	silty clay to clay	moderate, fine subangular blocky to granular	friable	abundant, fine and coarse
Aeg	5-13	pale brown (10YR 6/3 m); many medium, prominent mottles (10YR 5/6 m)	silty clay loam	fine subangular blocky and weak, medium platy	friable	abundant, fine
Btg1	13-35	very dark grayish brown (10YR 3/2 m); many medium, prominent mottles (10YR 5/6 m)	silty clay	strong, medium to coarse subangular blocky	firm to very firm	plentiful, medium and fine
Btg2	35-50	very dark gray (10YR 3/1 m); few fine, faint mottles (10YR 5/4 m)	heavy clay	shotty	friable	few, fine
Ckg	50-80	black (10YR 2.5/1 m); few medium, distinct mottles (10YR 5/4 m)	silty clay to clay	shotty and stratified	friable	very few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay
L-H	5.2	39.4	2.1	19	164.9	51.6	15.4	3.8	0.5				
Ahg	5.7	5.4	0.5	11	54.7	15.9	9.2	2.7	0.1	5	40	55	23
Aeg	6.2	1.5	0.2	8	20.9	7.9	4.2	0.7	0.1	10	59	31	10
Btg1	6.3	1.1	0.1	9	30.3	12.3	8.2	0.8	0.1	8	45	47	22
Btg2	7.6									1	26	73	38
Ckg	7.9									8	38	54	22

SUKUNKA SOIL

Location: 55°50'N 120°45'W T78-R18-W6th

NTS: 93P15

Surveyor: LF

Agency: AC, Vancouver, 1965

Identification: BC Soil Survey Report 8

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: medium-textured glaciolacustrine

Drainage: well drained

Slope and aspect: level to gently sloping

Elevation: 700 m

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence
L-H	3-0	dark brown leaf mat			
Ae	0-3	light gray (10YR 7/2 d)	silt loam	moderate, fine platy	friable
AB	3-10	light gray (10YR 7/2 d)		moderate, medium subangular blocky	hard, firm
BA	10-18	light brownish gray (10YR 6/2 d)	silty clay	moderate, fine subangular blocky	hard, firm
Bt	18-30	very dark gray (10YR 3/1 m)	silty clay	moderate, fine blocky and subangular blocky	very frim
Ck	30-56	very dark gray (10YR 3/1 m)	silty clay loam	moderate, medium pseudo-blocky	firm

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)				
					CEC	Ca	Mg	K	Na
Ae	6.6	0.4	0.1	4	6.5	3.1	1.8	0.3	0.1
AB	6.4	0.8	0.1	8	11.4	6.0	3.1	0.6	0.1
BA	5.7	0.8	0.1	8	19.7	9.0	6.6	0.6	0.1
Bt	5.6	1.0	0.2	5	28.6	14.5	15.0	0.4	0.2

SUNDANCE SOIL

Location: 54°51'N 119°25'W
NW35-T67-R10-W6th

NTS: 82L

Surveyor: AT

Agency: ARC, Edmonton, 1980

Identification: Alberta Res. Council
Bull. 39

Classification: Brunisolic Gray Luvisol (1978)

Landform and parent material:
glaciofluvial (or eolian) sand

Drainage: well drained

Slope and aspect: rolling

Elevation: 740 m

Additional notes: this soil is part of the Heart 3 soil unit (Wapiti map area) and similar to the Sundance soil of the East Pine area in B.C.

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F	3-0	relatively undecomposed pine needles, moss, grass and other plant remains				abundant, coarse
Ae	0-8	gray (10YR 6/1 m)	loamy sand	single grain	loose	abundant, coarse
Bfj	8-17	strong brown (7.5YR 5/6 m)	sandy loam	single grain	loose	plentiful, medium
Bm	17-35	yellowish brown (10YR 5/4 m)	sandy loam	single grain	loose	plentiful, fine
Bt	35-65	brown (10YR 4/3 m)	sandy clay loam	weak, fine subangular blocky	friable	few, fine and medium
Ck	65-120	dark grayish brown (10YR 4/2 m)	sandy loam	single grain	loose	very few, fine

CHEMICAL AND PHYSICAL DATA

Horizon	pH in H_2O	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)				Pyrophosphate (%)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay	Fe + Al
L-F	5.2				26.9	16.8	2.4	1.3	0.1					
Ae	5.4	0.2	0.0	10	2.5	1.6	0.2	0.1	0.0	75	23	2	0	0.45
Bfj	5.6	0.3	0.0	10	6.3	2.7	0.4	0.2	0.0	72	18	10	3	
Bm	5.8	0.2	0.0	9	4.7	3.4	0.6	0.1	0.1	73	18	9	4	
Bt	6.0	0.3	0.0	11	9.9	5.2	1.4	0.2	0.0	69	11	20	13	
Ck	7.6									73	13	14	7	

TAYLOR SOIL

Location: 56°09'N 120°39'W
SE5-T83-R17-W6th

NTS: 94A2

Surveyor: AG

Agency: AC, Vancouver, 1982

Identification: BC Soil Survey Report 42

Classification: Orthic Black (1978)

Landform and parent material: colluvial fan overlying clayey glaciolacustrine terrace

Drainage: well drained

Slope and aspect: 6% SW

Elevation: 500 m

Additional notes: site is an erosion gully; gravel lenses occur in the Cca/varved silt; moderately effervescent below 50 cm; the predominant soils of the map unit are Rego Black

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
Ap	0-22	dark grayish brown (10YR 4/2 d), black (10YR 2/1 m)	silty clay	moderate, coarse prismatic breaking to coarse angular blocky	hard, firm, sticky, plastic	plentiful, fine, vertical, inped
Bm	22-44	light gray (10YR 7/2 d), very dark grayish brown (10YR 3/2 m)	silty clay	very weak, medium columnar breaking to strong angular blocky	hard, firm, slightly sticky, plastic	few, fine, vertical, inped
BC	44-58	grayish brown (10YR 5/2 d), very dark grayish brown (10YR 3/2 m)	silty clay	very weak, coarse columnar breaking to strong angular blocky	very hard, firm, sticky, plastic	very few, fine, vertical, inped
Cca	58-118	grayish brown (2.5Y 5/2 d), very dark grayish brown (2.5Y 3/2 m)	clay	massive breaking to strong pseudo-blocky	very hard, firm, very sticky, plastic	nil
IICk	118+	light gray (2/5Y 7/2 d), dark grayish brown (2.5Y 4/2.5 m)	silty clay	strong pseudo-platy	hard, firm, slightly sticky, very plastic	nil

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	C:N ratio	Cation exchange (meq/100 g)					Particle-size distribution (%)			P1 (ppm)	Electrical cond. (mS/cm)	$CaCO_3$ equiv. (%)
					CEC	Ca	Mg	K	Na	Sand	Silt	Total clay			
Ap	6.4	2.5	0.4	6.7	34.0	26.3	4.1	0.4	0.0	5	45	50	36		
Bm	6.6	0.9	0.1	7.8	18.1	11.7	2.9	0.3	0.0	4	55	41	8		
BC	6.1	0.9	0.1	7.9	19.1	11.7	3.4	0.3	0.1	10	47	43		0.57	
Cca	7.5									15	38	47			5.2
IICk	7.6									11	48	41			4.5

WIDMARK SOIL

Location: 56°16'20"N 121°21'20"W

NTS: 93P6

Surveyor: WW

Agency: AC, Vancouver, 1971

Identification: BC Soil Survey Report 42

Classification: Orthic Gray Luvisol (1978)

Landform and parent material: silty glaciolacustrine

Drainage: well drained

Slope and aspect: 3% E

Elevation: 1000 m

Additional notes: AP A.15317-101

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Roots
L-H	1-0	leaf and twig litter			many, fine
Ae	0-10	very pale brown (10YR 7/3 m)	silt loam	fine platy	many
Bt1	10-13	olive brown (2.5Y 4/4 m)	silt loam	fine platy and granular	common
Bt2	13-33	dark brown (10YR 3/3 m)	silt loam	weak, angular blocky	common
BC	33-50	dark grayish brown (2.5Y 4/2 m)	silt loam	weak, angular blocky and pseudo-platy	few
Ck	50+	very dark grayish brown (2.5Y 3/2 m)	silt	pseudo-platy, laminated	very few

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)			
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fine clay
Ae	5.4	3.0	0.1	20.6	11.8	2.1	0.1	0.0	1	78	21	8
Bt1	7.3			21.8	15.8	2.1	0.1	0.0		75	25	10
Bt2	7.6	1.7	0.1	9.2	15.9	1.5	0.1	0.0	1	83	17	7
BC	7.6			9.5	18.3	1.6	0.1	0.0		82	18	7
Ck	7.5			7.6	15.1	1.1	0.1	0.0		88	12	4

ZONNEBECKE SOIL

Location: 55°34'N 121°34'W
NTS: 93P12
Surveyor: TV
Agency: RAB, Victoria, 1976
Identification: NE Coal Study
Classification: Orthic Eutric Brunisol (1978)
Landform and parent material: loamy colluvial blanket
Drainage: well drained
Slope and aspect: 45% S
Elevation: 725 m
Additional notes: AP BC 5119-104; bedrock is fine grained shale and sandstone

PROFILE DESCRIPTION

Horizon	Depth (cm)	Color dry (d) moist (m)	Texture	Structure	Consistence	Roots
L-F	6-0					abundant, very fine, oblique
Bm	0-20	yellowish brown (10YR 5/4 m)	loam	weak, subangular blocky	very friable	abundant, fine, oblique
Btj	20-35	yellowish brown (10YR 5/4 m)	gravelly loam	weak, subangular blocky	friable	abundant, fine, vertical
BC	35-90	yellowish brown (10YR 5/4 m)	gravelly loam	weak, subangular blocky	very friable	plentiful, fine, vertical
C	90-120	brown (10YR 5/3 m)	gravelly sandy clay loam	very weak, pseudo-blocky	very friable	plentiful, fine, vertical

CHEMICAL AND PHYSICAL DATA

Horizon	pH in $CaCl_2$	Organic C (%)	Total N (%)	Cation exchange (meq/100 g)					Particle-size distribution (%)			Pyrophosphate (%)	
				CEC	Ca	Mg	K	Na	Sand	Silt	Total clay	Fe	Al
Bm	5.0	0.6	0.1	9.0	4.1	1.4	0.3	0.1				0.1	0.1
Btj	5.5	0.4	0.1	9.3	5.1	1.8	0.2	0.0	27	47	26	0.1	0.1
BC	6.1	0.4	0.1	10.4	6.6	2.4	0.2	0.0	31	43	26	0.1	0.1
C	6.1			12.1	7.3	2.7	0.1	0.0	17	51	32		

MAPS NOT

FILMED

CARTES

OMISES